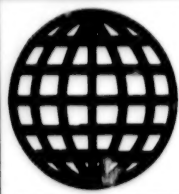


JPRS-TEN-94-018
12 July 1994



**FOREIGN
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JPRS Report

Environmental Issues

Environmental Issues

JPRS-TEN-94-018

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SOUTH AFRICA

**State: Oil Carrier Owners To Pay Pollution
Cleaning Costs**

*MB3006073094 Johannesburg Radio South Africa
Network in English 0500 GMT 30 Jun 94*

[Text] The government is holding the owners of the oil carrier, Apollo Sea, responsible for the oil pollution on the Cape West Coast. Speaking in a special debate in the Senate on the pollution, Transport Minister Mac

Maharaj said the owners had been informed by letter that they would be responsible for the cost of cleaning up. He said it would cost the Department of Environmental Affairs about five million rands to clean the coast.

Mr. Maharaj said the government would recommend to the International Maritime Organization that oil tankers stay at least 25 nautical miles offshore during summer, and 12 nautical miles offshore during winter. Legislation would also be considered to enforce strictly ship reporting along the coast.

XINHUA Article on Importance of Marine Resources

OW0807132194 Beijing XINHUA Domestic Service
in Chinese 2124 GMT 28 Jun 94

[By XINHUA reporter Zhang Rongda (1728 2837 1129): "Raise the Interest of the Whole Nation in the Seas and Oceans"; passages omitted comment generally on marine resources worldwide]

[Excerpts] Qingdao, 29 Jun (XINHUA)—The vast and rich seas and oceans have begun to attract the attention of more and more countries. The existence of mankind depends on the earth, but the earth is faced with the problem of a rapidly increasing population, a decrease in natural resources and the deterioration of the environment. People are now looking toward the seas and oceans and competition for maritime influence has become more and more fierce. A number of noted scientists of our country recently called again: To benefit the nation and make our country rich and strong, we must enhance the consciousness of the whole nation toward the seas and oceans. [passage omitted]

What are China's marine resources and how developed is the industry that exploits them? Marine scientists have painted an encouraging picture: In the vast coastal areas of our country, there are more than 20 inshore fishing sites and several thousand kinds of sealife things, including more than 100 kinds of fish with relatively high economic value. The continental shelves of our country have abundant oil resources. The proved deposit of petroleum is approximately 16 billion to 20 billion tonnes and the reserve of natural gas is approximately 6,300 billion cubic meters, constituting the major part of the western regions of the vast oil and gas belt of the Pacific Ocean. [passage omitted]

However, scientists and experts have frankly noted that, generally speaking, our country's development of high technology in marine science started relatively late and there is a clear gap between the levels reached in our country and the international level of marine technology. Those experts have solemnly reminded us that development of marine resources is a huge engineering undertaking, that so far our country does not have a comprehensive and unified department for marine development nor a unified strategy and plan for development, and the overall development of marine resources has been spontaneous, dispersed, and inefficient. Our investment in high marine technology is quite small and marine science and technology lag behind production. There are still many problems in administration, including the trend toward an unchecked increase in inshore fishing boats, a rapid decrease in fishing resources, particularly economic fish, due to excessive catches, and disorder and water pollution in some sea areas which seriously endanger the development of aquatic products.

In the face of this backward situation, the only way out is to work hard to catch up with advanced countries. Prof. Zeng Chengkui, who is also an academician at the

Chinese Academy of Sciences and a pioneer in Chinese marine biology research, pointed out that we must enhance the national consciousness of the seas and oceans, mobilize people across the whole country to build China into a sea power, and unhesitatingly consider the development of marine resources to solve population, resource, and environmental problems as a basic policy. He suggested that, in order to protect China's maritime rights and interests, and to cope with the new maritime order in the world, we must promptly adjust our maritime policy, strengthen the legislation of maritime law and the administration of marine resources, promote the study of a maritime development strategy, formulate plans for maritime development, and increase investment in maritime development. [passage omitted]

World Bank Grant To Be Used To Eliminate Ozone Depleting Substances

40101002B Beijing CHINA DAILY (National)
in English 3 Dec 93 p 3

[Text] China has received a \$6.92 million grant from the World Bank for a national project to eliminate ozone depleting substances (ODS).

The agreement, which was signed on Tuesday, will introduce new ODS technology in five Chinese factories.

It is expected to reduce their combined ODS output by 16,000 tons per year.

China is one the developing world's largest consumers and producers of ODS. In 1991, the government ratified the Montreal Protocol on ozone protection, which commits countries to control ODS production.

According to Shahid Burki, Director of the World Bank's China Country Department, the grant "establishes the foundation for a long-term programme to provide China technical and financial support to meet its commitments to phase-out the use of ODS."

China consumes about 50,000 tons of ODS each year and produces about 30,000 tons. ODS consumption has been growing at about 11 per cent a year in China.

Pollution To Remain Serious in Northeast China

40101002A Beijing CHINA DAILY (Opinion)
in English 27 Nov 93 p 4

[Text] Northeast China, one of the country's oldest industrial centres, has a big problem—pollution.

Every year, millions of tons of industrial waste is discharged into the Songhua River, contaminating drinking water and killing fish.

Local governments, environmental protection agencies and enterprises have spent time and money on the problem, but the situation remains serious.

A recent article in Science and Technology Daily attributes the problem to a lack of capital, lack of updated technology and poor co-ordination among government departments.

The article says it is time for the government to initiate a new system to improve implementation of environmental laws and co-ordination of the public and private sector.

The lack of capital is the biggest problem. While everyone seems to agree that environmental protection is important, no one is willing to put their money where there mouth is.

The Pharmaceutical Factory of Harbin is the top polluter in the city. It pours 20,000 tons of waste into the Songhua River daily.

According to officials, the factory spends nothing on environmental protection, even though it is expected to reap 50 million yuan (\$8.63 million) this year.

The company is unable to spend money on environmental protection because a large share of its profits must be turned over to local government departments and shareholders.

The factory now pays an annual fine of 1.2 million yuan (\$210,000) for polluting. It is estimated that installing waste treatment equipment would cost 3.6 million (\$620,000).

In the short term, it is more worthwhile for the factory to pay the fine.

According to departments in charge of industrial enterprises and environmental agencies, anti-pollution projects can not get financial support because environmental protection is not included on the local government's economic and social development programme.

Furthermore, enterprises making little profit and those in the red have no incentive to upgrade their operations.

Another issue in China's green movement is technical problems.

The Harbin Pharmaceutical Factory once planned to close off its heavily contaminating penicillin workshop by burying it.

But this scheme might have polluted ground water. The factory spent several million yuan on other proposals, but none was feasible.

Such technical problems are troubling other enterprises in the region.

What type of technology to purchase is another important issue, according to the article.

A chemical corporation in Jilin devoted a huge sum of money to building a waste water treatment plant that handles 200,000 tons daily.

Since then it has saved lots of money by reusing waste water.

The same corporation, however, spent 70 million yuan (\$12 million) importing other treatment equipment that only produced unsatisfactory results.

The third problem in environmental protection involves government management. Environmental protection agencies lack authority. When the interests of the State, local governments, collectives and individuals are in conflict the environment is usually the victim. Most of the time other issues take priority and the environment is left out.

Ministry: Beijing To Raise Forestry Coverage to 15 Percent

*OW0207133994 Beijing XINHUA in English
1252 GMT 2 Jul 94*

[Text] Beijing, July 2 (XINHUA)—Minister of Forestry Xu Youfang said today that China will strive to bring its forest coverage from the current 13.92 percent to 15.3 percent by the turn of the century.

"The goal could be reached even one or two years earlier," Xu told the current Eighth Session of the Standing Committee of the Eighth National People's Congress (NPC) in his work report.

He told the legislators that his ministry has halted the decline in the growing stock.

"This is of far-reaching significance as the world forest resources are shrinking annually," Xu said.

There are 133.73 million ha of forests in China and its growing stock has reached 11.79 billion cubic meters.

He said that China plants more than 33.3 million ha of trees every year and cultivates forests by sealing up the mountains. The standard rate of artificial afforestation has reached 84.5 percent and the survival rate has reached 29.5 percent.

The increment value of the forestry industry in the country is growing at an annual rate of 9 percent and the total output value will rise from the present 140 billion yuan (about 16.28 billion U.S. dollars) to 304 billion yuan by the year 2000, he noted.

The minister said the country has witnessed a sharp decrease of forest fires since the catastrophic blaze of 1987 which devastated timber resources in northeast China's Dahinggan Mountains.

The annual incident rate has been controlled at less than 0.31 per thousand, compared to the world's average of one per thousand, according to Xu.

Xu said his ministry will increase co-operation and exchanges with other countries and international bodies.

The ministry has established ties with one third of the world's countries and regions.

A 300-million-U.S.-dollar tree planting project funded by the World Bank to grow fast-growing trees is the biggest both for the World Bank and China.

Li Ruihuan Urges Measures To Curb Misuse of Arable Land

*OW0107163694 Beijing XINHUA in English
1535 GMT 1 Jul 94*

[Text] Beijing, July 1 (XINHUA)—Li Ruihuan, chairman of the National Committee of the Chinese People's Political Consultative Conference (CPPCC), today urged measures to be taken to curb the mis-use of arable land and to reverse the trend of farmland reduction.

Li was addressing the seventh meeting of the Standing Committee of the National Committee of the CPPCC, which concluded today in Beijing.

He said that although China has a large territory, it has only 100 million hectares of arable land and the largest population in the world.

He said that the farmland area has been decreasing sharply these years while the population has been increasing rapidly.

From 1957 to 1986, the arable land area of the country decreased by 40 million hectares. And in 1993 alone, it was reduced by 620,000 hectares.

But the population of the country is growing by 16 million people every year.

Li pointed out that the reduction of the country's farmland is mainly due to it being used for industrial construction and the setting up of development zones.

Although most of the land is used legally, it should be admitted that many farm sites are willfully occupied. In 1987, more than 10 million cases involving illegal occupation of farmland, totalling 540,000 hectares, were dealt with. In 1993, farmland amounting to 760,000 hectares was randomly occupied by various kinds of development zones.

Li also warned that China faces serious land erosion and a deteriorating ecological environment.

To increase the farmland area, Li proposed that deserts, water-covered areas and beach-like tracts along rivers should be explored and exploited.

Science and technology should be applied to farming so as to improve the quality of land and the grain output.

As north-west China is vast and sparsely populated, Li said, this area should be explored. If the water shortage in the area is solved, most of the vast deserts in north-western China would be transformed into farmland.

Ye Xuanping, vice-chairman of the National Committee of the CPPCC, presided over today's meeting.

Ye said that the participants heard a report on agriculture by State Councillor Chen Junsheng and voiced a great deal of advice and proposals for the country's agricultural development.

The meeting also handled some procedures of personnel changes.

Product Labels Get 'Green' Light

*40101010B Beijing CHINA DAILY [NATIONAL]
in English 18 May 94 p 3*

[Article by Ma Zhiping: "Product Labels Get 'Green' Light"]

[Excerpt][Passing omitted] The China Certification Committee for Environmental Labelling Products (CCEL) laid out its agenda for protecting the public yesterday in Beijing, bringing the total number of product quality certification committees to 13 in China.

The birth of this committee means that environmental protection, China's "green industry," has entered a new development period. It will play a positive role in promoting the quality of products with environmental labels and the awareness of environmental protection among the public, CCEL director Xie Zhenhua said.

"Environment labelling, which is also called ecological or green labelling, indicates that products with this mark are harmless and will cause little pollution to the environment," said Xie, also head of the National Environmental Protection Agency.

The committee will be made up of 24 people from environmental protection, economic administration, research institutions, supervisory bodies and social groups. It will draft policies, appraise products and issue certificates to those qualified products.

The label contains the sun, mountains and a river surrounded by 10 circles, symbolizing people's unity in protecting the environment.

The committee will also handle disputes and develop exchanges with foreign environmental groups.

The practice of "environment friendly labels" began in West Germany in 1978 and has since spread to 20 countries including the United States, Japan and Singapore.

The CCEL is the only third-party certification group for environmental labels, said Li Baoguo, deputy director of the State Technical Supervision Bureau. It was formed in line with national product quality regulations.

Xie said the committee will start work soon. "All enterprises which have met the requirements set in the

regulations can now hand in written applications to local provincial or regional agencies for environmental protection," noted the CCEL director.

The committee will issue written examinations, conduct on the spot inspections and test concerned technologies before issuing the certificates.

China has 12 other third-party certification committees to ensure the quality of automobiles, special glasses for vehicles, rubber products and medicine.

Clean Coal Center Set Up To Cut Pollution

40101010A Beijing CHINA DAILY [ECONOMIC]
in English 6 Jun 94 p 2

[Article by Tian Ying: "Clean Coal Center Set Up To Cut Pollution"]

[Text] The China Clean Coal Engineering Research Center has been set up in a bid to cut down the pollution involved in coal burning.

And at the opening ceremony of the Beijing-based center on Saturday, Coal Industry Minister Wang Shenhao, wrote: "Developing clean coal engineering technology and making use of coal in a more efficient way makes for a cleaner environment."

The center's major tasks include developing coal engineering technology, providing technical training and consulting services and helping the State to draft policies for developing clean coal technology, said Zhu Deren, director of the center.

The research of clean coal technology is one of the major issues in environmental protection.

Such technology is of particular importance to China.

The country is the largest coal producer and consumer in the world. And its coal production accounts for one-quarter of the world's total. Coal will continue to be China's major energy source for the next several decades.

The technology for the coal industry will be one of the important factors deciding whether the national economy can develop in a healthy way, Zhu said.

The efficiency of coal is low in China. Less than 30 percent of the country's coal is used for generating electricity while the rest is burnt directly. More than 81 percent of the coal consumed in China is raw coal which is not washed. Such coal causes serious pollution.

"The development of coal engineering technology and the widespread use of such technology is urgent," said Zhu.

Environmental Agency Organizes Three Gorges Survey

HK2806155194 Beijing ZHONGGUO XINWEN SHE
in English 1308 GMT 28 Jun 94

[Text] Wuhan, June 28 (CNS)—The National Environmental Protection Administration has recently organized renowned experts and leading officials to conduct surveys on environmental protection, water pollution and environmental administration in the Three Gorges area along the Yangtze River.

The survey group arrived in Yichang, Hebei Province on June 24 where the Three Gorges Project is carried out. The group comprises scientific advisers from the Environment Committee of the State Council, academicians of the Chinese Academy of Sciences and those of the Chinese Academy of Engineering. The group heard briefing, paid inspection visits to the dam area of the Three Gorges, the new site of Zigui county town, the Maoping Brook and the Huangbo River.

The environmental protection work in the dam area included into the project is now undertaken by the Three Gorges Corporation. Environmental problems resulting from the great project mainly involve atmosphere pollution, water pollution, noise pollution, healthy state of persons affected by the project and public hygiene, abandoned wastes and solid wastes, all of which pose intensive and extensive impacts on environment of the construction area where the project is carried out.

Supervision of environmental quality in the construction area since the preparatory work for the project showed that water quality in the construction area along the mainstream section of the Yangtze River basically maintained a certain standard while quality of water resources from the water supply plant generally met the drinkable standard. Quality of atmosphere in the construction area was good while noise pollution there met the regulations of noise standard. Quality for other items were generally quite sound. As the project goes on, impacts on quality of environment in the construction area may appear to various extent. Necessary measures will be adopted in the course of the project including strengthening supervision of environment and prevention of pollution. Meanwhile, scientific research will be conducted and special groups required of the project be set up while legal guarantee will be offered in a bid to effectively reduce environmental pollution because of construction of the project.

Suzhou City Strengthens Environmental Protection*OW2906084394 Beijing XINHUA in English
0830 GMT 29 Jun 94*

[Text] Nanjing, June 29 (XINHUA)—The scenic city of Suzhou, in east China's Jiangsu Province, is trying hard to strengthen environmental protection while vigorously developing the local economy.

Local officials said that the city has relocated about 100 factories or workshops from the old city proper, in combination with the adjustment of the economic structure and technological upgrading of enterprises.

It has completed pollution treatment for 134 projects in the city, and built or extended three sewage treatment plants.

The city has delineated zones where smoke, dust and fixed noise sources have been brought under strict control.

As rural industry has been developing fast, great improvement has also been made in environmental protection of the city's suburbs.

Surveys show that the quality of drinking water sources for rural residents of the city has met government-set requirements. The quality of air over the city have also met government standards.

The city has worked out over 30 sets of local environmental protection rules and regulations, covering air, dust, noise, the treatment of pollutant discharges and supervision and management.

Right in Suzhou, construction of a 70 sq km modern industrial park, a joint development project between China and Singapore, is being carried out.

The city has adopted policies to further strengthen treatment of the environment in the planned industrial park and in adjacent areas, to meet standards in developed countries, the officials said.

For instance, the Suzhou Sulphuric Acid Factory, which used to be located close to the northern side of the park, was asked to stop production and the site has become a heat and power plant to supply the industrial park.

Besides changing the course of a sewage canal to avoid sewage from Suzhou city going to the industrial park, the city has also extended its sewage treatment plant in the eastern part of the city to take more sewage from the industrial park.

World Bank Provides New Loans for Afforestation Program*OW2906140194 Beijing XINHUA in English
1352 GMT 29 Jun 94*

[Text] Beijing, June 29 (XINHUA)—The World Bank has decided to provide another 200 million U.S. dollars in loans for China's largest national afforestation project as China has reported initial success of the program, which covers 240 counties in 16 provinces.

The new loans will be used to plant 620,000 hectares of trees in the 16 provinces and another 280,000 hectares of shelterbelt along the Chang Jiang River in Sichuan and Hubei Provinces.

According to an official from the Ministry of Forestry, China initiated the World Bank-funded afforestation program in 1991. Three years of effort have added trees to 985,000 hectares of land as scheduled.

To carry out the program, the Ministry of Forestry and participating localities have established special offices to supervise the use of loans and ensure afforestation quality.

Over the past three years, the official said, more than 80,000 people have been trained in 1,800 classes through the program. Technological advances have been applied throughout the entire program.

A recent survey of 99.6 percent of the afforested land by the Ministry of Forestry shows 96.9 percent of the afforestation is up to standard. A World Bank official hailed the program as one of the best World Bank loan projects.

To further carry out the program, the Ministry of Forestry plans to plant trees on another 370,000 hectares of land so as to bring the total afforested land to 1.35 million hectares by the year 1996.

Chen Junsheng Addresses Conservation Law Seminar*HK2906160294 Beijing ZHONGGUO XINWEN SHE
in English 1240 GMT 29 Jun 94*

[Text] Beijing, June 29 (CNS)—A general survey on land showed that soil erosion was rather serious which affected a total area of 3.67 million sq. kilometres, making up 38.2 percent of the gross territory across the country.

Soil erosion happens to various extent in all provinces, autonomous regions and municipalities across China which is one of the countries suffering from the most serious soil erosion in the world. Such problem has become a grave obstacle to the national economic and social development.

Speaking in an annual seminar on implementation of law for water and soil conservation, the State Councillor, Mr. Chen Junsheng, stressed that every possible means had to be tried in order to protect water and soil resources as well as to exploit land resources in a scientific way.

The Vice-minister of Water Resources, Mr. Zhou Wenzhi, pointed out that great progress had been made in water and soil conservation during the past 40 years. Basic farmland developed specially for the tackling of soil erosion was put at 150 million mu. An annual gain of 13.5 billion kilograms of grains was ensured following

the harnessing of the soil erosion. Other work on dealing with the problem included the harnessing of barren hills and the planting of 500 million mu of economic forest for water and soil conservation, cultivation of 50 million mu of fruit-bearing economic forest and the planting of 50 million mu of grassland. The water and soil conservation project was considered by the general public as "benevolent work".

Mr. Zhou said that China had promulgated regulations of water and soil conservation three years ago and then formulated corresponding rules for implementation of the regulations. The rules were tried in 350 counties across the country and valuable results were turned out.

He added that a legal system for water and soil conservation as well as a system for supervision of law enforcement in this regard would be rapidly built up. Investigation will be conducted on a number of serious cases related to soil erosion in a bid to reduce the man-made factors to the minimum degree which were blamed for soil erosion. Meanwhile a fund for the water and soil conservation will be set up while other practices will be carried out including popularity of utilization rights to undeveloped land.

Environmental Protection Industry Undergoes 'Rapid' Growth

OW3006015594 Beijing XINHUA in English
0054 GMT 30 Jun 94

[Text] Tianjin, June 30 (XINHUA)—With the increase of investment in environmental protection, China's environmental protection industry has seen rapid growth in recent decade.

In the Seventh Five-Year Plan period (1986-90), China's investment in environmental protection amounted to 55 billion yuan and in the Eighth Five-Year Plan period (1991-95), the investment will reach 80 billion.

According to the State Bureau of Environmental Protection, there are now more than 1,000 enterprises with 460,000 employees engaged in research and production in environmental protection.

The annual growth rate of the number of enterprises is about 20 percent.

In recent years, these enterprises have begun to develop and make dust removing and sewage processing equipment.

Last year, the output value of the enterprises was more than 10 billion yuan.

Some of the equipment and technologies in environmental protection have been exported to about 30 countries and areas in the world. Annual export value is about 100 million U.S. dollars.

In the past two years, China had set up two environmental protection industrial bases. One is Jiangsu Province's

Yixing Environmental Protection Scientific and Technological Park, whose annual output value reached 3 billion yuan.

The other is the Tianjin Jinnan Environmental Protection Industrial Base, which has developed more than 100 kinds of products.

Asian Development Bank Funds Afforestation Project

OW3006092694 Beijing XINHUA in English
0907 GMT 30 Jun 94

[Text] Manila, June 30 (XINHUA)—The Asian Development Bank (ADB) today approved a total of 78 million U.S. dollars in loan and technical assistance to China for the Yunnan-Simao Forestation and Sustainable Wood Utilization Project.

The project will help the Chinese Government develop and manage sustainable forest resources and establish a pulp mill for processing wood in Yunnan Province, the Manila-based bank said.

With the ADB loan amounting to 77 million U.S. dollars, the ADB said, a forest management plan will be developed, trees will be replanted on suitable land and the new mill will be built to process 51,000 metric tons of bleached softwood pulp a year.

Two technical assistance grants—one for 600,000 U.S. dollars for forest eco-system planning and agro-industrial pollution control and the other for 400,000 U.S. dollars to develop corporate ownership and management systems for the pulp mill—will be provided under the project.

The loan, from the ADB's ordinary capital resources, will be repaid over 25 years including a grace period of seven years with interest to be determined in accordance with the bank's pool-based variable lending rate system for U.S. dollars which currently is 6.67 percent per annum.

The project is expected to be completed in 1999.

Song Jian Tours Nature Reserves in Northwest China

OW2506145494 Beijing XINHUA in English
1427 GMT 25 Jun 94

[Text] Xian, June 25 (XINHUA)—Song Jian, state councillor and minister in charge of the State Science and Technology Commission, inspected some nature reserves in northwest China's Shaanxi Province from June 22 to 24.

He visited the Foping Nature Reserve of wild plants in Hanzhong Prefecture, the panda living area at Changqing Forest Bureau and the Shaanxi Provincial Observation Station for crested ibis.

After listening to reports about work in the nature reserves, State Councillor Song said that while concentrating their efforts on protecting the wild animals and plants, nature reserves should try to make full use of their ecological environment to develop the local economy so as to raise funds to enable the protection work to continue.

He said that in some areas with the right conditions, a certain scale of animal husbandry and tourism is allowed and to breed endangered wildlife is encouraged.

State Councillor Song noted that satisfactory achievements have been made in protecting the crested ibis and the panda, which were both on the edge of extinction, adding that this showed that as long as everybody paid attention to protection of wild animals and plants, big progress would be made in the building of a good ecological environment.

Shanxi Uses Foreign Funds in Environmental Projects

OW2506164794 Beijing XINHUA in English
1453 GMT 25 Jun 94

[Text] Taiyuan, June 25 (XINHUA)—Loans from international financial organizations and governments are used in control of water and atmospheric pollution in Shanxi Province, one of the most important energy and chemical industry centers in China.

With the approval of the State Council, the province plans to construct five intensive heating and coal gas projects to reduce air pollution. It has asked for loans from the Asian Development Bank (ADB). At present, the 120 million U.S. dollar loan has been listed among the ADB's reserve projects for 1996.

The five projects involve three big industrial cities in the province—Taiyuan, Datong and Yangquan. They will provide residents with heating and coal gas and will greatly improve the atmospheric environment of the three cities.

The scheme will cut out the release of 21,800 tons of sulphur dioxide and 50,900 tons of dust and smoke every year. It will also save the consumption of 1.19 million tons of coal annually.

The main industries in Shanxi are coal mining, electricity, metallurgy and chemical industry, which are all pollution intensive industries.

Shanxi is rich in coal but severely short of water. Much of the water the province does have is heavily polluted. The control of water pollution is the key aim in using foreign investment.

A loan from the French Government amounting to 4.95 million U.S. dollars is expected to be used in control of polluted water in Yangquan city. Another joint project in

disposal of waste water containing nitrogen is under negotiation between Shanxi Fertilizer Factory and Germany.

The head of the Environment Protection Bureau of Shanxi said that the use of foreign funds in environmental protection would not only solve the problem of money, but also introduce advanced technical equipment and scientific management methods.

Forestry Minister on Balancing Environment, Development

HK2706135094 Beijing RENMIN RIBAO OVERSEAS
EDITION in Chinese 6 Jun 94 p 2

[Report on interview with Forestry Minister Xu Youfang by staff reporter Lu Peifa (7120 1014 3127) on World Environment Day; place not given: "Heavy Responsibilities for Environmental Protection and Development—Interviewing Forestry Minister Xu Youfang on World Environment Day"]

[Text] It is one of China's basic national policies to plant trees, make the country green, and improve the natural environment. To develop forestry, China has enacted and carried out a series of policies, laws, regulations, and measures, which enable China's forestry construction to embark on a course of steady development. On World Environment Day, this correspondent interviewed Forestry Minister Xu Youfang to hear his views on environmental protection and development.

Every year for more than a decade, leaders of the central government, in their capacity as ordinary citizens, have taken the lead to participate in afforestation activities, and their acts have set a good example for people throughout the country. The joint efforts of people throughout the country have brought about great and historic changes in the construction of China's forest industry, and great achievements have been made in afforestation and forest protection. Since 1981, a total of 3.4 billion people have taken part in tree-planting activities on various occasions and 18 billion trees have been planted. Over the past few years, some 80 million mu of land have been afforested each year. By now, three provinces—Guangdong, Fujian, and Hunan—have afforested all barren land that can be planted with trees, and they have been commended by the party Central Committee and the State Council. This year, some other provinces will accomplish the task, too. Major achievements have been made in the construction of a 100-million-mu base of fast-growing timber, the "three norths" (north China, northeast China, and northwest China) shelterbelt networks, the shelterbelt networks in the middle and upper reaches of the Chang Jiang, the coastal shelterbelt networks, the farmland shelterbelt networks on the plains, the Taihang Shan afforestation project, and the national desert control project, all of which form the basic framework of China's ecological improvement efforts. While the scale of afforestation is expanding continuously, close attention also has been

given to raising its quality. The verified total acreage of man-made forests that are up to the state requirements has reached 285 million mu, and the yield has gone up from 65.6 percent in 1988 to 84.5 percent in 1992. The consumption of forest resources also has been brought under effective control. According to the second national survey of forest resources (1977-81), the annual average consumption of forest resources was 294 million cubic meters, while annual average growth was 275 million cubic meters, with an annual average deficit of 18.75 million cubic meters. In the third national survey of forest resources (1984-88), annual average consumption was 344 million cubic meters and annual average growth was 366 million cubic meters. By the time of the fourth national survey (1989-93), annual average consumption was down to 320 million cubic meters, while annual average growth went up to 400 million cubic meters. These figures show that China's forest resources are increasing steadily. In a situation in which forest resources in the world as a whole are on the decrease, the increase in China's forest resources can be considered an important contribution China has made to the development of forestry and the protection of the world's natural environment.

China, however, still faces an arduous task in building up its forest industry. On the one hand, it is still a country with a shortage of forests. Its percentage of forest coverage is 13.92 percent, lower than the world average, and its per capita average of forests is even lower. There are still large tracts of mountains and wasteland which need to be afforested, and large areas of desert and land threatened by desert which need to be improved. On the other hand, owing to the insufficient forest coverage, the problem of the natural environment remains serious. Taking the country as a whole, half of the population, one-third of the cultivated land, and one-third of the major cities are situated below the flood-warning line of rivers, and areas that generate two-thirds of the country's total industrial and agricultural output value are threatened by floods. According to statistics, there is an average of about 500 million mu of farmland under the constant menace of natural disaster, of which that caused by drought accounts for 61 percent; that by flooding, 24 percent; that by hailstorms, 9 percent; and that by frost, 6 percent. In addition, there are the calamities of dry and hot winds and low temperatures. To effect a fundamental change in this situation, the most important thing is to further sharpen the whole society's sense of ecology and a better environment, make great efforts to develop the forest industry, continuously expand the green canopy, and bring into full play the role of forests as an ecological shelterbelt with their multiple functions.

Minister Xu pointed out: In the world today, the cry for the development of forestry is growing louder and louder, and China's modernization drive has imposed higher and higher demands on the forest industry. As a major task and the chief content of environmental construction, forestry must make its contribution not only to the improvement of the natural environment, but also—in conjunction with the readjustment of the industrial setup in the countryside and the local economy—to

improving the livelihood of people in mountainous areas, to improving the investment environment in the drive to open up to the outside world, and to promoting spiritual civilization. China will adhere to its own road for the development of the forest industry, and taking as its objective the development of highly efficient and sustained forestry that provides greater and better yields and focusing closely on the two major tasks of reform and development, will comprehensively accomplish the goal for the development of forestry in the 1990s—that is, to fulfill the predetermined national afforestation tasks one or two years before the turn of this century. By 1995, 13 provinces (autonomous regions and municipalities) will basically accomplish the task of afforesting all their barren mountains where trees can be planted, and by 2000, the number of provinces (autonomous regions and municipalities) will reach 21, and the percentage of forest coverage in the country will be raised to around 15.3 percent. By then, the total output value of the forest industry will increase from the current 140 billion yuan to 304 billion yuan.

Progress Made in Research Into Ozone Depleting Substitutes

OW2406092994 Beijing XINHUA in English
0814 GMT 24 Jun 94

[Text] Hangzhou, June 24 (XINHUA)—An ODS [ozone depleting substances] substitutes research center has been set up here to help protect the ozone layer and the global environment.

The main task of the center is to improve the research and development of substitutes for ozone depleting substances (ODS), by developing new products and technology.

The research center was set up on the basis of the chemical industry research center in Zhejiang Province under the Ministry of Chemical Industry.

Zhejiang is an important production base of fluorine raw material ore in China. The amount of reserves, production and exports account for one-third of the total in the whole country.

The Zhejiang Chemical Industry Institute has successfully worked out dozens of substitutes for freon that do little harm to the ozone layer. Some are under test use and are supplied to major refrigerator enterprises.

The substitute for another ozone depletion substance—halon, a fire extinguishing agent—is under development.

ODS are mainly used in industrial cooling and electronic cleansing devices. When the substances are released into the atmosphere they are likely to destroy the ozone layer, which absorbs ultra-violet light and reduces the sun's radiation.

China is the biggest ODS producer and consumer among the developing countries. It joined the Vienna pact for the protection of the ozone layer in 1989.

In 1992 China drew up its first national program for progressively eliminating ozone depleting substances.

AUSTRALIA

Paper Views Cost of Implementing Climate Change Pact

BK3006115494 Sydney THE AUSTRALIAN FINANCIAL REVIEW in English 20 Jun 94 p 18

[Editorial: "Climate Policy Hits Reality"]

[Text] The pious statements repeatedly uttered by the Australian Government on the subject of greenhouse gas emissions are coming back to haunt it. The detail of the UN Framework Convention on Climate Change has yet to be negotiated. However, the Clinton White House has signalled a much tougher stand. The U.S. has declared the current international commitments on greenhouse gas reduction to be "inadequate."

Australia, which was sheltering comfortably behind President Bush's unwillingness to make a strong commitment to greenhouse gas reduction, now faces the possibility of serious economic damage.

The Australian economy is energy intensive. Coal is our largest export and the fuel for 70 per cent of electricity generated. Australia also produces a significant share of the world's aluminium.

Australia's mistake has been to adopt an "interim planning target" of a 20 per cent reduction of carbon dioxide emission levels below 1988 levels by 2005.

While this target is subject to the caveat that there must be no significant economic cost to Australia, it is the target rather than the caveat that has been accepted as Australia's position.

In fact it now seems that any significant reduction in the level of emission of greenhouse gases will impose very significant costs on Australia.

According to the Australian Bureau of Agricultural and Resource Economics, the cost of just meeting the proposed "stabilisation" target of 1990 levels of emissions by the year 2000 would be about \$9 billion [Australian dollars] a year.

The likely cost of meeting the Government's interim planning target is claimed by the Business Council of Australia to be more than \$40 billion.

Australia would be disadvantaged in a number of ways. The demand for its energy (and energy-based) exports would be reduced as other industrialised countries imposed carbon taxes and other measures. At the same time, Australia would lose business to developing nations that are not constrained by the treaty as it was forced to impose its own restrictions on emissions.

It has been suggested that Australia should seek to strike a "Cairns Group" style of alliance with other countries that will be adversely affected by any move to substantially reduce greenhouse gas emissions.

However, it seems that Australia is rather isolated. There are few countries that stand to lose as much from a toughening of the commitments under the Climate Change Convention.

Australian must make what may appear to some of its negotiating partners and environmentalists as a change in direction.

Instead of emphasising the interim planning target, Australia must emphasise the potential cost to its economy.

It must clearly signal that it will need the special consideration promised under the convention for countries "with economies that are vulnerable to the adverse effects of the implementation of measures to respond to climate change."

It must seek to make the provision in the convention for "burden sharing" a more important issue in the negotiations.

Moreover, it must be a loud voice for caution in dealing with the greenhouse issue.

There is as yet too little information on the likely extent of the problem for governments to commit themselves to hugely expensive measures.

A great deal more has to be spent on research to establish both the likely extent and the effect of global warming.

In the meantime, policies to deal with the potential impact of greenhouse gas emissions should be mainly of the "no regrets" variety. That is, they should be directed at changes that are worthwhile regardless of the extent of the warming.

For example, in Australia a more competitive, national market for electricity should eventually lead to reduced greenhouse gas emissions.

That's because the most cost-efficient patterns of production are also likely to produce the least carbon dioxide.

National competition should lead to increased use of gas-fired generators, which are cleaner than coal-fired generators, use of Tasmanian hydro-electricity stations instead of high-cost peak-load plant in the mainland States, and increased use of black coal rather than the dirtier brown coal for base-load power.

Competition from co-generation would further reduce costs and carbon dioxide emissions. That is partly because the co-generation plants use fuel that has to be burnt anyway, and partly because most co-generation plants in Australia are gas-fired.

Environmentalists may be bitterly disappointed, but the Australian Government's policy on greenhouse gas emissions must take account of Australia's particular economic reality.

CAMBODIA

'Senior Government Official' Defends Log Export Decision

BK0107100494 Hong Kong AFP in English
0949 GMT 1 Jul 94

[Text] Phnom Penh, July 1 (AFP)—The Cambodian co-premier's controversial decision to transfer responsibility for log exports to the defence ministry was a temporary measure and only concerned timber which had already been cut, a senior government official said Friday.

"It is a special case for a certain period of time and also for a clearly determined quantity of felled logs," the official, who asked not to be named, told AFP.

Political controversy erupted after a June 17 letter from co-Premiers Prince Norodom Ranariddh and Hun Sen to Thai Prime Minister Chuan Likphai announcing the decision, was made public early this week.

"According to the newly established procedures and modalities, the Ministry of National Defence of the Kingdom of Cambodia was entrusted to deal directly with the matter of timber export," a copy of the letter obtained by AFP said.

Finance Minister Sam Rangsi, however, said the co-premiers' move was against the law and represented a serious threat to the environment.

"It goes against the budget law," Sam Rangsi, whose ministry could stand to lose revenue [as received], said.

"I think it can cause very serious damage to our forests, to the environment if there is not enough control, and I would say no control at all, on wood cutting and the export of timber," the minister said.

Sam Rangsi said he could not comment further as he was a member of the government.

"This is a decision of our two prime ministers, what can I say?" he said.

Although a ban on the export of unprocessed timber came into place March 1, two Thai companies would be allowed to continue to extract felled logs, the senior government official said.

The felled logs were in dangerous areas under the control of the armed forces and would otherwise rot on the ground, he said.

The government had "special measures" to ensure that no new timber was felled, he added, without specifying.

The official also dismissed concerns that the revenue from the sale of the logs would be used by the military to finance fresh offensives against the radical Khmer Rouge, which are expected to be launched once parliament passes an upcoming bill to formally outlaw the radical faction.

INDONESIA

Editorial Views Ecological Impact of Deforestation

BK0607090994 Jakarta MERDEKA in Indonesian
14 Jun 94 p 6

[Editorial: "The Ecological Impact of Timber Production"]

[Text] It is heartening to note that problems related to the country's forests will be minimized with the government's intention to review most of the forest concession applications submitted by the private sector after authorities made certain conflicting statements. An example is the government's previous statement, which stated that the Salim Group had been given back 128,000 hectares out of the 570,220 hectares of forest reserves in Riau after the Forestry Department rescinded the group's permit.

Pulp producing factories will definitely benefit from the government's move if the statement regarding the Salim Group is true. Unquestionably, the PT Indah Kiat Pulp & Paper Factory will reap a huge benefit as a result of this move because of its early establishment in the region. This is credible when considering the recent 30 percent increase in the price of paper and the rising demand for the commodity.

If we delve on the subject of forests and the production of primary timber products, then certain funds have to be constantly available for their continuous production. It has been predetermined that the foreign exchange acquired from oil and natural gas resources will decline sooner or later. Therefore, there is an imminent need to expedite more exports of nonoil products. This strategy is considered logical and Indonesia's forests definitely will become a target and sacrifice for development.

In 1988, the government enforced the Letter of Decision No. 275/Kp/VIII/88 issued by the trade and industry minister in an effort to eliminate the country's problems with its tropical forests. This decision was taken to change the categories of natural timber products to processed timber products. Such a method is known as webbing [preceding word in English]. The reason this move was the good demand for forestry products, such as timber or rattan, in foreign markets. These products cannot be exported to other countries in their natural form. Thus, numerous plywood, knock-down [preceding word in English] furniture, and rattan weaving basket factories sprouted like mushrooms. However, these factories proved to be unbeneficial because such products could be taken apart by importing countries and returned as "raw materials" and could be processed according to the request of the importers.

All of this definitely led to the rapid depletion of Indonesia's forests. Speaking during a meeting with Parliamentary Commission X [Roman ten] in December 1992, Indonesia's expert on ecology, Professor Otto Sumarwoto reminded that Java Island will be transformed into a "barren desert" by the next century (by the year 2002). The expert, a Berkeley University graduate currently tutoring

at Pajajaran University, considered the decisions taken at the Earth Summit during the Rio Convention held in Brazil problems which "have yet to be solved." According to him, Indonesia should be primed to anticipate several matters which could turn into issues during the protocol meeting of the Rio Convention.

If a more detailed study presently were to be conducted, what Otto Sumarwoto termed as "Java Island" is, in fact, considered "the country." On the other hand, Latin America's tropical forests are being depleted due to the rapid pace of development. This poses another problem of "development," which is yet to be solved. Instead of being dependent on petroleum and the other strategic natural resources, several countries sacrificed their abundant tropical forests. They declared they embarked on these measures for the sake of shoring up funds for development rather than obtaining more World Bank loans.

When Otto Sumarwoto expressed his concern over "Java Island" becoming a "barren desert" in 1992, Susan George, in her book *THE DEBT BOOMERANG*, included a list of countries which are burdened by foreign debts and which have depleted their forests. She called these acts of depletion deforestation. Mexico, with its foreign debts amounting to U.S.\$112 billion in 1992, had deforested 30 percent of its total tropical forest region while Brazil, with its foreign debts totalling U.S.\$112.5 billion, had deforested 23 percent of its total tropical forest region. Indonesia, then with its total foreign debts of U.S.\$78 billion, deforested 51 percent of its total forests area; Venezuela, with only a minimal sum of foreign debts, deforested 80 percent of its total forest lands.

What will be the fate of the tropical forests of these countries if they are burdened with huge amounts of foreign debts which have to be indemnified? Let us assume that the deforestation and the increase in foreign debts are continuously in proportion. When a country's foreign debts reach the U.S.\$100 billion mark, the percentage of deforestation certainly will increase to more than 61 percent.

Authorities Detain Singapore Ships for Waste Dumping

BK0207155194 Jakarta Radio Republik Indonesia Network in Indonesian 1500 GMT 2 Jul 94

[Text] Security forces in the Riau islands have foiled an attempt by two Singapore-flagged ships to dump waste into the Riau waters and detained them. Zahran, Head of the Riau Provincial Office of the Department of Communications, said in Pekanbaru today that the barges towed by a tugboat were dumping 200 metric tons of waste from Singapore into the Matur waters near Bintan Island on 29 June. Some 40 percent of the waste containing food, fruit cans, and factory garbage had been dumped into the water when the barges were detained for having no valid transportation documents. The barges were detained by a naval security patrol unit from Kijang, Tanjungpinang with the assistance of the local

military commander. The two barges were detained following a tipoff from local residents who were suspicious of the garbage scattered in the Matur waters. The security forces are questioning the crew of the Singapore-flag ships and further action will be taken against them in accordance with law.

Imported Waste Containers Await Return to Netherlands

BK2706055794 Jakarta KOMPAS in Indonesian 16 Jun 94 p 8

[Excerpt] Bandung, KOMPAS—A total of 90 containers of imported plastic waste are still lying idle at Tanjungpriok Port, Jakarta. The government is currently making continuous efforts to ship the containers back to the Netherlands—their country of origin.

Minister of State for Environment, Ir. [academic title] Sarwono Kusumaatmaja stated this to the press in Bandung on Wednesday 15 June. According to the minister, the government is facing difficulties in trying to ship back the plastic waste because the containers were smuggled into the country. The Netherlands Government considered that it was not responsible for the existence of the plastic waste in Indonesia.

Continuing, Minister Sarwono said the Netherlands Government will accept the waste only if an official decision was endorsed by the Netherlands Supreme Court. The court is currently attending to the case in question. He said, "We hope that the Netherlands Supreme Court makes an endorsement to take back the plastic waste to the country."

The minister went on to say that should the Netherlands Supreme Court refuse to accept the plastic waste, then Indonesia will take alternative measures for the waste to be returned to the country. Minister Sarwono said, "We will make our move through political, diplomatic, and legal channels in the International Court."

The minister also stated that the imported plastic waste had probably entered the country through certain Dutch exporters who had exploited the facilities afforded to them by the authorities. However, the plastic waste could not have entered Indonesia without the involvement of some local importers.

Sarwono said, "As a result of this, the North Jakarta High Court is pursuing the case against two local industries that imported the plastic waste."

He said, moreover, the continuing presence of the 90 containers of plastic waste at Tanjungpriok Port effected a loss in income by the port because the area could not be leased out to other companies. Apart from this, the whole location and environment is subjected to the danger of being exposed to the poisonous toxic substance.

Minister Sarwono explained, "Therefore, the loss in income suffered by the port authorities will be included in the claim when it is served on the Dutch and Indonesian industries." [passage omitted]

JAPAN

Panel Calls for Production of Recyclable Products

OW0607080594 Tokyo KYODO in English
0733 GMT 6 Jul 94

[Text] Tokyo, July 6 KYODO—A trade ministry advisory panel issued a report Wednesday [6 Jul] calling on manufacturers to boost efforts to produce recyclable products.

The report, issued by a Waste Disposal and Recycling Subcommittee of the Industrial Structure Council, urged makers to design products in a way they can be easily recycled when disposed.

Such efforts have already been started by automobile and home appliance manufacturers, the report said.

The report incorporates guidelines for assessing the extent to which products can be recycled.

The 11-point guidelines include such things as ways to make it easy to dismantle products, whether the contents of parts used in products are specified and how to reduce product components that cannot be recycled.

The report calls on makers to consolidate an in-house system to reassess how recyclable their products are.

The report stressed the need to reduce the volume of industrial waste and study ways to recycle waste effectively.

Report: Fiscal Policy Should Address Environment

OW0107191194 Tokyo KYODO in English
1030 GMT 1 Jul 94

[Text] Tokyo, July 1 KYODO—Fiscal policy should take the natural environment into account by redistributing investment allotted to public works according to whether the projects are environment-friendly, a body affiliated with the Finance Ministry said in a report Friday [1 July].

Noting that natural preservation does not necessarily hamper economic activity, the Institute of Fiscal and Monetary Policy urged public investment in the recovery of polluted areas and in the prevention of environment destruction.

It also pointed to the need for investment in the establishment of environment-friendly cities and transport systems.

The report said the use of economic measures such as fees for garbage collection are more effective than regulations to promote antipollution policies.

It stopped short, however, of giving specifics on the timing and the scale of the fiscal measures, noting that international cooperation and compatibility with the current tax system need to be considered.

South Africa, Sudan Reportedly Seek End to Ivory Trade Ban

OW0207083794 Tokyo KYODO in English
0804 GMT 2 Jul 94

[Text] Tokyo, July 2 KYODO—South Africa and Sudan are seeking a lifting of the five-year-old international ban on ivory trade, government sources said Saturday [2 July].

The two African countries plan to table their proposal to modify the Convention on International Trade in Endangered Species (CITES), which has banned ivory trade since 1989, at a convention meeting scheduled for November in the United States, the sources said.

South Africa argues that the prohibition has led to an overpopulation of elephants in the country, hurting the ecology and the living conditions of the people.

Sudan seeks an end to the ban because it wants to export ivory and elephant skins stocked in the country, according to the sources.

The two countries are urging a downgrading of the African elephant from appendix I to appendix II of the CITES regulations, which would effectively lift the ban.

Their proposal will undoubtedly meet strong criticism and opposition from the U.S., Kenya and other proponents of the prohibition as well as conservationist organizations.

The international ban on trade of elephant products, including ivory, came in response to a sharp decline of African elephants in the 1980s.

The number of African elephants plunged from 1.3 million in 1979 to below 600,000 in 1989.

A resumption of ivory trade was also proposed by southern African countries, including South Africa, Zimbabwe and Namibia, in the 1992 CITES conference in Kyoto.

Agency Says PRC Industrialization May Increase Acid Rain

OW0407103894 Tokyo KYODO in English
1007 GMT 4 Jul 94

[Text] Tokyo, July 4 KYODO—Industrialization in China may exacerbate acid rain in Japan although current levels remain stable and are not worse than those in the United States and European countries, the Environment Agency said Monday [4 Jul].

In releasing research into acid rain in Japan, the agency also said there were cases of blight in trees from an unknown cause, but the effects of acid rain were not denied.

The agency tested samples of rain for four years beginning in fiscal 1989 at 28 points in Japan.

The figures for pH, or hydrogen exponent, of rain water tested at each point averaged 4.5-5.8 over the four years, with the average of all sites at 4.8, agency officials said. The nearer the pH figure is to zero, the more acidic the water is.

The figures were largely unchanged from data collected beginning in fiscal 1983 and were close to the pH of rains surveyed in the U.S., at 4.2-6.1, and in European countries, at 4.3-6.1, during a closely corresponding period, they said.

The agency detected high acidity on four islands along the Sea of Japan—Tsushima in Nagasaki Prefecture, Oki in Shimane Prefecture, Sado in Niigata Prefecture and Rishiri in Hokkaido—in fall through winter every year, the officials said.

The remote islands are largely unaffected by pollution from Japan's main islands, they said, adding that substances causing acid rain may have been brought by seasonal winds from continental Asia, including China.

It is the first time the agency has officially suggested that industries in China may play a role in acid rain in Japan.

The agency also surveyed forests for three years beginning in fiscal 1991 at 43 areas, of which 14 areas were found to have blighted trees.

Of the 14 areas, the trees at nine locations were blighted because of disease or other causes, but the reason for other sites could not be detected, and the agency does not deny the possibility the trees died from acid rain.

'Sources': Tokyo To Say Carbon Dioxide Target Achievable

*OW2906084594 Tokyo KYODO in English
0825 GMT 29 Jun 94*

[Text] Tokyo, June 29 KYODO—Japan will inform the body administering an international convention on climate change that it can achieve its targets for the curbing of emissions of carbon dioxide and other so-called greenhouse gases sought in the convention, government sources said Wednesday [29 June].

The sources said Japan has mapped a package of measures, including the introduction of daylight-saving time, to peg individual carbon dioxide output at roughly the equivalent of the 1990 level by 2000.

The government will present its report to a July inter-governmental negotiating committee meeting on the Climate Change Convention at the convention secretariat headquarters in Geneva after approval of the report from a special cabinet meeting on global environmental preservation.

The convention was one of the key documents produced at the UN-sponsored Earth Summit in Rio de Janeiro in 1992.

Under the existing energy-saving strategy, overall annual carbon dioxide emissions would be some 3.5 billion tons, or 2.7 tons per person.

This is considerably more than the 1990 level of 3.2 billion tons, or 2.59 tons per person.

But in a revised long-term supply and demand forecast, the sources said Japan will report it can achieve its target by paring back electricity consumption by cutting the use of computers and televisions and through the introduction of daylight-saving time.

They said this would result in a fall in emissions to 3.3 billion tons, and if population growth is taken into account, this would be equivalent to 2.6 tons per person.

However, a source in the Agency of Natural Resources and Energy said a breakdown showing the exact amount of expected reductions for each measure introduced would not be included in the report.

A spokesman for the environment agency said this does not pose a problem because the convention only focuses on overall emission amounts.

Among other countries to submit their reports, Canada has said it expects a 10 percent increase in its overall carbon dioxide emissions and Britain has said it can stabilize its emissions.

The treaty, which came into force in March, states that countries voluntarily undertake to adopt their own strategies to alleviate the effects of climate change and that by September they report to the secretariat on their amounts of emissions of greenhouse gases and their plans for dealing with global warming.

Tokyo To File Protest Against Antarctic Whale Sanctuary

*OW2906115794 Tokyo KYODO in English
1034 GMT 29 Jun 94*

[Text] Tokyo, June 29 KYODO—Japan will table a formal objection against the International Whaling Commission's (IWC) decision to establish a whale sanctuary in the Antarctic Ocean, government sources said Wednesday [29 June].

The Ministry of Agriculture, Forestry and Fisheries came to the conclusion that "the sanctuary decision has no scientific evidence," the sources said.

At the IWC's annual conference in Mexico on May 26 this year, whaling nation Japan was the only country to vote against the proposed whale sanctuary, which will outlaw whale hunting from 40 degrees latitude south to the shores of Antarctica except around South America.

If a signatory to the International Whaling Convention files a formal objection against a resolution adopted by the commission, its content becomes null-and-void for the protesting country.

The decision to file an objection with the IWC will have to be approved by other ministries concerned and the cabinet.

The ministry also decided to dispatch a whaling fleet for the Northern Pacific Ocean to hunt minke whales for "scientific" purposes, the sources said. The fleet's mother ship will set sail Thursday.

The ministry, which commissioned seven research missions in the Antarctic since 1987 catching some 300 minke whales each, believes that such research "is necessary beyond learning about the impact of the sanctuary."

Another option for Japan to protest against the whale sanctuary would have been to walk out from the international organization like Iceland did in 1991, frustrated over an IWC moratorium on commercial whaling.

But the sources said, "even if we had withdrawn (from the IWC) it would have been difficult to resume commercial whaling in view of international public opinion."

This year's IWC conference turned down Japan's request to allow it to catch 50 minke whales a year along the shores of Japan to support coastal communities affected by the whaling moratorium, which was decreed in 1982 and went into effect in 1985.

With the support from antiwhaling nations the conference, however, adopted a resolution urging a reconsideration of research whaling in the Antarctic and Northern Pacific Oceans.

Japan had asked for permission to catch 100 minke whales south of the Kamchatka peninsula in the Russian Far East.

In 1982 Norway and Japan tabled objections to the moratorium, but Tokyo eventually withdrew its protest to avoid U.S. economic sanctions and halted commercial whaling.

However, Norway resumed commercial whaling in 1993 despite ardent protests from environmentalists.

Kazuo Shima of the Fisheries Agency, Japan's chief delegate to the IWC, said with the planned objection Japan wants to clearly state its opposition to the whale sanctuary.

"The sanctuary will destroy the ecosystem of the ocean, and it will not be effective for the protection of whales," Shima said.

Advisory Panel Calls for 'Energy-Efficient' Products

*OW2706073694 Tokyo KYODO in English
0653 GMT 27 Jun 94*

[Text] Tokyo, June 27 KYODO—The government and the private sector should jointly explore ways to make industrial activity compatible with environmental protection, a governmental advisory panel proposed Monday [27 June].

In a report presented to International Trade and Industry Minister Eijiro Hata, the Industrial Structure Council said environmental issues should be addressed in all stages of corporate activity—parts procurement, manufacturing, distribution, sale, consumption and disposal of waste materials.

Specifically, the private sector should make efforts to develop energy-efficient, easy-to-recycle products that are in harmony with the environment, the report said.

The council also said companies should develop ways to make the corporate manufacturing process pollution-free.

These goals can be achieved through cooperation among different industrial sectors, such as between materials and manufacturing industries and between makers and retailers, the council said.

The council said energy consumption by Japan's 15 major manufacturing sectors accounts for 84 percent of the total energy use by makers in this country.

The 15 sectors are steel, aluminum, nonferrous metals, materials, chemicals, synthetic fibers, paper-pulp, cement, autos, household electrical appliances, electronic equipment, electric power, gas, petroleum and distribution.

If the proposed steps for environmental protection are carried out in the 15 industrial sectors, a substantial environment-related business will be created, with the market size of such business growing to 23 trillion yen in 2000 and to 35 trillion yen in 2010 compared with 15 trillion yen at present, the report said.

The council said the government should support the efforts by the private sector, both financially and technologically.

An administrative framework also should be improved to achieve the goals, including deregulation, the council said.

Tokyo To Host International Environment Conference in October

*OW2406122994 Tokyo KYODO in English
0908 GMT 24 Jun 94*

[Text] Tokyo, June 24 KYODO—Japan will host a three-day environment conference in Tokyo beginning October 24 to discuss promotion of environmental assistance to developing countries, organizers said Friday [24 June].

The Tokyo Conference on Global Environmental Actions will discuss targets of environmental aid and fresh measures to raise necessary funds, as well as trade and population issues connected with environment, they said.

The forum will serve as a follow-up to the eminent persons' meeting on environment and development held in April 1992 in Tokyo, the officials said.

Environmental assistance extended by 21 developed countries in 1993 was down 11.4 percent from the previous year, partly because of recession.

The Agenda 21 adopted in June 1992 at the United Nations "Earth Summit" in Brazil set a target of 125 billion dollars for annual world environmental aid, but the promise has not kept.

Participants at the Tokyo conference will include Klaus Topfer, chairman of the Commission on Sustainable Development, Robert McNamara, former president of the World Bank, and former Japanese premiers Noboru Takeshita and Toshiki Kaifu.

An organizing committee consists of lawmakers from both the ruling and opposition camps as well as business organizations sponsors the meeting.

SOUTH KOREA

Time Running Out in Search for Nuclear Waste Storage Site

SK2606015894 Seoul THE KOREA HERALD
in English 26 Jun 94 p 3

[By staff reporter Yu Chong-mo]

[Text] With the world abuzz over the North Korean nuclear problem these days, an extraordinary kind of nuclear crisis is brewing in South Korea. The deadline for the government to secure a place to permanently store radioactive wastes from domestic nuclear power plants is fast approaching. But officials at the Ministry of Science and Technology (MOST) are finding themselves increasingly helpless in the face of strong resistance from local residents who fear their "backyards" might be contaminated.

Analysts warn South Korea may have to suspend its nuclear power generation around 2001 should it fail to find a permanent storage by the end of next year. Considering atomic reactors account for nearly 40 percent of electricity consumption here, suspension of their operations would deal a hard blow to national economy.

In Korea, where the first nuclear power plant was built in 1978, nine reactors are currently in operation, generating about 4,500 to 5,000 drums of radioactive waste annually. The mountains of waste, however, have been stored at provisional facilities inside nuclear power plants, raising problems regarding safety and capacity.

The government, keenly aware that the temporary depots will be filled before 2001, has desperately searched since the late 1980s for a region willing to host a waste dump.

Seven coastal towns had been designated as candidate sites and MOST promised to redevelop the finally selected town into a comprehensive science and research complex at a cost of 760 billion won. The ministry also offered to spend 3 billion won annually on improving the welfare of the concerned residents.

But each time the government's efforts ended in failure in the face of angry protests from Nimby activists. In the latest incident, the ministry early this month had to scrap its plan to build a dump site in Ulchin, North Kyongsang Province, after residents there staged violent street demonstrations.

Waste from the nuclear power stations is classified into two kinds according to the degree of radioactivity. Used nuclear fuel and substances reprocessed from the used fuel are called highly radioactive wastes. As Korea strictly abides by IAEA [International Atomic Energy Agency] regulations, reprocessed wastes, like plutonium essential to making N-bombs, are not produced here.

Low-grade radioactive wastes refer to almost all kinds of throwaway items used at the nuclear power stations, including operators' clothes, shoes, gloves, and tools.

A total of 43,700 drums of low-grade wastes have been produced by the nine reactors through April, occupying over 55 percent of the existing temporary depots, whose aggregated maximum capacity is 79,900 drums, the Korea Electric Power Corp. (KEPCO) said. Depots of highly radioactive wastes were also filled up to 57 percent of capacity.

KEPCO has recently expanded Kori's storage capacity by 23,000 drums and taken other emergency countermeasures. Nevertheless, one after another temporary depot will reach saturation between 1995 and 2001—Ulchin Nuclear Power Station in 1995, Yongkwang in 1999, and Kori and Wolsong in 2001, respectively.

Considering that it takes at least six to seven years to build a permanent storage facility, the selection process has to be finished by the end of next year. On the other hand, the fact that seven more reactors are currently under construction adds to the seriousness of the problem.

Furthermore, the Nimby syndrome is likely to intensify with the advent of the provincial self-rule system next year.

Despite a series of studies confirming the safety of preserved radioactive wastes, the public doubts hardly show signs of abating. A recent poll found that 52.5 percent of the people have negative image toward nuclear-related matters and nearly half mistakenly believe that reactors can suddenly explode just like an atomic bomb. Shortly after the survey, MOST officials started to call radioactive waste "nuclear byproducts" in its bid to dispel the negative image.

As part of the government's last-ditch publicity efforts, Science and Technology Minister Kim Si-chung had a mini nuclear waste dump installed next to his office in Kwachon last December.

MOST once considered building a permanent depot on an uninhabited island or in an abandoned mine, but such plans turned out to be ineffective.

If the government fails to meet the deadline eventually, even the possibility of "exporting" the wastes should be explored, a MOST official laments.

LAOS

Sweden To Extend Forestry Aid by Four Years

BK2706135594 *Vientiane KPL in English*
0929 GMT 27 Jun 94

[Text] Vientiane, June 25 (KPL)—The government of Sweden has extended its forestry assistance to the Lao PDR [Lao People's Democratic Republic] to another four-year term from 1995-1999.

Jorgen Schonning, first secretary to the Swedish embassy, who is now acting as charge d'affaires a.i. signed a memorandum of understanding on the assistance with Deputy Agriculture and Forestry Minister Phimpha Thepkhamheuang on June 23.

The Swedish assistance to Laos in the forestry sector has entered its fourth stage lasting five years. In the past, the Swedish government has provided considerable assistance to the country in this sector. The signing of the memorandum came after SIDA and the Lao side held their meeting between May 30-June 3 in Vientiane. The meeting reviewed the implemented plan of the Lao-Swedish forestry cooperation programme over a period of six months from October 1993 to March 1994.

This programme includes seven projects: the technical support project, the nation-wide forestry survey project, the forestry project, the technical study project, the forestry resource preservation project, the project for ending slash-and-burn farming and the project for forestry development area.

The meeting unanimously viewed that the activities of all these projects proved very successful, particularly the ending of the destructive method of farming, the allocation of fixed engagement for farmers, the trial of forest and land allocation for villages and families to manage and use in several areas, personnel training, afforestation, and tree nursing.

MALAYSIA

G-77 Urged To Reject Social, Environment Links to Trade

BK2506112094 *Kuala Lumpur Voice of Malaysia*
in English 0600 GMT 25 Jun 94

[Text] Malaysia has urged G-77 [Group of 77] countries to reject the proposal to introduce social and environmental clauses into the world trade. Law Minister Datuk Syed Hamid Albar said the attempt to introduce these clauses will undermine the objectives of trade liberalization and perpetuate protectionism. He added G-77 must remain vigilant and check this attempt which would be detrimental to the objectives of a liberalized trade regime. He was speaking at a special ministerial meeting of the Group of 77 in New York. The text of his speech was faxed today.

At the meeting held to commemorate G-77's 30th anniversary, Syed Hamid called on the joint coordinating committee involving the G-77 and the Nonaligned Movement to chart a common strategy. He said G-77 had to continue to build the bridges not only with groups and institutions in the South but with those outside to overcome the asymmetries in the international economic system.

In welcoming South Africa as a new member of G-77, Syed Hamid said that cooperation among developing countries was an integral part of the strategy to achieve economic growth. He stressed the problems of developing countries would not be resolved if they remained dependent on the international community and without a specific follow-up of the declarations adopted. He said the issue of poverty which affected one-third of the global population should be given priority attention in the United Nations agenda for development.

MONGOLIA

Minister Views Joining Environment Protection Convention

BK0407021494 *Ulaanbaatar MONTSAME in English*
0610 GMT 3 Jul 94

[Text] Ulaanbaatar, July 2 (OANA-MONTSAME)—The Minister of Protection of Nature and Environment D. Batjargal who has attended the meeting of inter-government committees on final consideration of the draft international convention on struggle with drought and soil sand-covering has announced about Mongolia's intention to join this convention. D. Batjargal noted that joining this convention, signing of which on to join this convention. [sentence as received] D. Batjargal noted that joining this convention, signing of which is expected in October, would enable Mongolia to receive a necessary assistance on the part of the international community in solution of big problems connected with nature protection.

D. Batjargal informed that he has attended the conference on the nature protection issues held in Potsdam. He pointed out to the signing of an agreement on cooperation between Mongolia and Brandenburg [name as received] and reaching an agreement on mutual cooperation on the issues of nature and environment protection.

PHILIPPINES

Environmental Group Urges U.S. To Cleanup Former Bases

BK0407041594 *Quezon City Radio Filipinas in English*
0230 GMT 4 Jul 94

[Text] An environmentalist group in the Philippines is urging the U.S. Government to take full responsibility for the environmental cleanup of its former military installations in the country.

A spokesman of the Philippine Environmental Action Network said the toxic waste that resulted during the Americans' stay in the country was indiscriminately

disposed of in the surrounding areas of Clark Air Base and Subic Naval Base in Angeles and Olongapo in Pampanga.

The group is asking that the cleanup of the former military facilities be done now because it said, the longer the wait, the harder is the cleanup, and the more risk the people be exposed and contaminated to toxic waste.

Police 'Green Army' To Combat Environmental Crimes

BK2906095394 Manila MANILA STANDARD
in English 25 Jun 94 p 4

[By Romie A. Evangelista]

[Text] The Philippine National Police [PNP] has created a special unit which assists the Department of Environment and Natural Resources (DENR) in implementing environment protection laws.

Outgoing Philippine National Police chief, Director General Umberto Rodriguez, said the new police unit called by PNP Environment and Natural Resources Protection Force (ENRPF), to be known as the PNP Green Army, shall be composed of selected men from the PNP Regional Mobile Force and will be backed by local units from PNP Traffic Management Command, the PNP Maritime Command, the Police Aviation Security Command, Philippine Coast Guard and the local police units.

The PNP chief issued last 25 May Letter of Instruction 17/94 dubbed as "Oplan Kalikasan [Nature Operation Plan]" aimed at assisting the DENR in implementing ecology protection laws.

ENRPF teams were specifically tasked to conduct crack-down on illegal logging, illegal fishing and coral collection, poaching by foreign fishermen, the campaign against smoke-belching vehicles in urban centers.

The ENRPF will closely coordinate with the intelligence units of the Department of Agriculture, DENR and Coast Guard and concerned non-governmental organizations (NGOs) to apprehend violators.

Regional directors who were given authority to decide how many members the local ENRPF, will also have direct command and supervision of the local ENRPF units. [sentence as published]

All items seized from arrested suspects will be turned over to concerned government agencies that will also handle the investigation and filing of appropriate charges.

Early this year, the PNP, on orders of the president, deployed a company of SAF [expansion unknown] troops in Lanao del Sur to guard against illegal logging operations in the Lake Lanao watershed area.

THAILAND

Impact of River, Industrial Estate Pollution

94W'N0303A Bangkok ATHIT in Thai
20-26 May 94 pp 14-23

[Excerpt] [Passage omitted] The Phong River, which runs through Khon Kaen Province, used to be the main artery supporting the crop-growing areas over an area of approximately 500,000 rai. The crops produced here were worth about 237 million baht a year. Moreover, each year, approximately 1,850 tons of fresh-water fish were caught in this river. But in March 1992, there were reports that because a large amount of waste water had been released from the Khon Kaen Sugar Refinery, which is located along the bank of the Phong River. This waste water flowed into the Chithi River, which runs through Maha Sarakham, Roi Et, Kalasin, and Yasothon Province, and then into the Mun River in Ubon Ratchathani Province. The area affected the most was the area extending approximately 560 km south of the sugar refinery. The water was cloudy and sticky. The fish and breeding fish in the river that came into contact with the waste water died immediately, and this happened to be the time when the fish lay their eggs. The surface of the Phong River was filled with dead fish. It is estimated that more than 90 percent of the breeding fish in the river died because of this. Experts announced that it would be at least 4 or 5 years before the river returned to normal. Clean water from the Ubon Rat Dam, which is almost dry, will have to be used to flush away the waste water. It will take about 48 million cubic meters of clean water to clean up this section of the river.

Before he was appointed secretary general to the prime minister, Dr. Thawat Wichaikit, who was then the governor of the Provincial Water Works Authority, talked about this disaster. He said that "losses from this will total at least 1 billion baht. Besides this, there is also the psychological damage that has been done to the people who live along the river. It is impossible to put a monetary value on this damage."

Initially, people blamed this and that for the pollution of the Phong River. Some said that the cause of this was the plywood mill that burned down, with the ruined buildings washed into the river. But later on, the governor of the Provincial Water Works Authority, Dr. Thawat, quoted an expert who provided clear data to the Khon Kaen Provincial Committee, which was chaired by the provincial governor and which had tended to put the blame on the plywood mill. Dr. Thawat summarized things rather clearly, stating that chemical tests showed that the Khon Kaen Sugar Mill had released molasses, a substance that is produced during the refining of sugar, into the river. After that, the Khon Kaen Provincial Committee tried to present data showing that this was an "accident." That is, the sugar mill did not intentionally release this substance. Rather, there were technical problems that resulted in the molasses being released from the treatment plant and storage tanks.

But even if the losses are at least 1 billion baht as stated by Dr. Thawat when he was the governor of the Provincial Water Works Authority and even though he said that the Water Works Authority must restore the water pipeline system throughout the northeast because of this disaster, to date no progress has been made in putting the blame on the mill.

What is worrisome is that it has not been possible to determine which unit is responsible for this matter. The Office of the National Environment Board, which was established during the administration of Anan Panyarachun, has stated that there is no law that makes the National Environment Board responsible for this. Even the Environmental Law drafted in 1992 does not say anything about this.

Mr. Pricha Anthaphiphat, the then director-general of the Department of Industrial Works, later announced that "the sugar mill will definitely be fined. But it won't be closed, because the committee has decided that this stemmed from circumstances beyond control."

This disaster, which caused losses of "at least 1 billion baht" and which did "inestimable psychological damage" was summarized in a "memorandum" between Mr. Pricha Anthaphiphat, the director-general of the Department of Industrial Works, and Mr. Chawalit Chinthammit, the manager of the Khon Kaen Sugar Mill. This stated that 56 million baht would be paid to clean up the Phong River. This agreement was reached in May 1993, or about 1 year after this accident occurred.

But at the beginning of 1994, Mr. Sawat Sipsaiphrom, the deputy minister of agriculture and cooperatives, who is now in charge of this matter, told reporters that "the owner of the Khon Kaen Sugar Mill has expressed the intention of donating 56 million baht to help clean up the Phong River on condition that he be awarded the Ratchasiriyaphon Medal, because he feels that this donation will help society. Personally, I disagree with this, because what happened is well known. We have the memorandum between the Department of Industrial Works and the sugar mill. The Department of Industrial Works has sat by idly and not gone after that money, which leads us to wonder if they are somehow involved with the sugar mill."

The case involving the Khon Kaen Sugar Mill is not the only such case. The Phoenix Pulp and Paper Mill was twice ordered to close down for 30 days each time. On 27 March 1995 [as published], there was a fire at the mill. Two months later, there were charges that the Phoenix Mill was releasing waste water into the Chot Creek, the mill's waste water treatment site, and then into the Phong River, with the result that fish within approximately 15 km of the mill were killed. To date, neither of these mills has paid any damages, and both stories have begun to fade away.

Because industry has been expanding rapidly and the need for electricity for new cities has been increasing quickly, in 1978 the Electricity Generating Authority of

Thailand (EGAT) built another lignite power plant in Mae Mo District, Lampang Province. Initially, there were 10 generating units with a generating capacity of 1.7 million kw. This provided electricity to consumers in the central region and the large cities.

It is well known that EGAT administrators and the committee that studies the environmental effects stemming from the production of electricity have clearly stated that burning lignite to generate electricity produces sulfur dioxide. When this is released into the atmosphere, it produces "acid rain," which can do great damage to the environment. For example, acid rain can kill the large trees and farm crops in that area. The air becomes polluted and causes pulmonary disorders among the people, and the roofs of houses made of corrugated tin begin to corrode. Thus, by statute, this pollutant must not be allowed to exceed a level of 300 micrograms per cubic meter.

In May 1991, or about 13 years after the plant was built, people in Mae Mo District began experiencing more and more unusual things. Besides the fact that the tin roofs of the people's houses began to corrode and people began to come down with strange diseases such as bronchial and pulmonary disorders and cancer, the number of forest animals in that area began to decline. Also, the fish caught in the streams there smelled of sulfur.

The people living in Mae Mo District began expressing their opposition and talked about "acid rain" and the "polluted air." Mr. Phaichit Uathawikun, the then minister attached to the office of the Prime Minister, who was in charge of overseeing EGAT, admitted the environmental effects caused by lignite power plants. But he mentioned the difficulties and huge cost involved in cleaning up the environment, because this would require installing "pollution control devices" at each of the electricity generating units. This would cost about 3 billion baht per unit. Installing such devices for all 10 units would cost approximately 30 billion baht.

Phaophat Chawanalkhikon, the then governor of EGAT, said that if such machines were installed, EGAT would have to raise electricity prices greatly. For this reason, if devices were installed, they would not be installed at all the units. He also said that "the air in Lampang is less polluted than in Bangkok."

The matter gradually abated from one interview to the next. But then, during the period 1-3 October 1992, a terrible environmental disaster occurred at Ban Sop Pat in Mae Mo District, Lampang Province. The air was filled with dust and swirled around the houses and fields of the people. About 200 people suddenly became ill. They suffered from headaches and difficulties in breathing. Doctors told the parents of one 11-month-old child who was taken to the nearest hospital that if they had brought him in just 10 minutes later, he would have died.

At that time, Sawit Phothiwiwok was serving as the minister attached to the Office of the Prime Minister and was in charge of overseeing EGAT in place of Phaichit

Uathawikun. This businessman, who was in tune with industrial interests, immediately said that what happened in Lampang during the period 1-3 October 1992 was a "natural accident." That is, there was low atmospheric pressure, which stirred up toxic substances. It was a freak accident. But while Minister Sawit considered this to be a "natural accident," people examined the sulfur dioxide levels in that area and found that the level of sulfur dioxide there was 2,112.9 micrograms per cubic meter, or almost 100 times the normal level.

Prior to that, Mr. Sawit may not have been interested in the report sent by the director of the Lampang Central Hospital. In his report, he stated that the leading cause of death in Lampang was cancer and that approximately 80 percent of the patients treated at the Mae Mo Hospital were suffering from bronchial disorders. Besides this, the 1993-1996 development plan for Lampang Province clearly states that environmental problems have arisen in Lampang Province because of the soot and smoke produced at the various industrial plants and at the Mae Mo lignite power plant. In Lampang Province, the average temperature during the summer is 40-42 degrees Celsius. That is the highest temperature anywhere in the northern region. The number of people who have become ill because of pollutants produced by the Mae Mo plant has increased to over 1,000 people.

Mr. Sawit's "natural accident" in October 1992 caused opposition politicians to raise this issue in the House of Representatives. It was finally decided to install pollution control devices at a cost of 3 billion baht per unit. But to begin with, devices would be installed at just four of the units, that is, units 8, 9, 10, and 11, because of the high cost of the devices. And they would be installed over a period of 3 years. That is, they would go into operation in 1995. Because of this, EGAT's production costs would increase by 5 satang [1 satang equals .01 baht] per unit. EGAT generously agreed to bear this additional cost itself.

As for those who have already suffered from the pollution, EGAT has agreed to pay them compensation. That is, it will pay 4-5,000 baht to each of those who have become seriously ill because of the pollution and an additional 100 baht per person for the time lost. It will pay 100 baht per person to those who have developed minor illnesses. As for the damage done to the trees and rice fields, it will pay 100 baht for each tree lost and 1,800 baht per rai for affected rice fields. But only 1,000 people were eligible to receive compensation.

There was a news report stating that beginning in 1989, which is about 11 years after this power plant was built, data were submitted to EGAT showing the effects caused by the sulfur dioxide. The reports have clearly stated that the pollution must be controlled by:

Installing pollution control devices.

Planting rows of trees to intercept the pollution.

Moving the population centers away from the production sites.

But so far, there is no indication that EGAT plans to act on these data. Most of the managers at this power plant live in Lampang City, and some live in Bangkok. This may be the reason why there has been no reaction to these data.

The Lamphun industrial estate is located in Muang District, Lamphun Province. Construction was completed in 1985. Initially, it was stated that this would be an "agricultural estate." But later on, foreign investors wanted to invest in electronics industries and industries that use chemicals. Thus, this industrial estate shifted focus to handle electronics industries from Japan. That was around 1987. This happened with the full support of the BOI, or Board of Investment.

In October 1993, Mayuri Tewiya, age 30, a worker at the Electron Ceramics Plant, which is located in this industrial estate, discovered that she was slowly developing "unusual" symptoms. That is, she had begun suffering from headaches and weakness in her arms and legs. She went to the McCormick Hospital in Chiang Mai Province for treatment, which is not a hospital that the industrial estate set up for the more than 16,000 workers there. Doctors at the McCormick Hospital told her that she was suffering from overexposure to a substance known as "alumina." In February 1994, Mayuri went to see this doctor again in order to determine exactly what the cause was. The doctor at the McCormick Hospital again said that her illness had definitely been caused by alumina.

Dr. Oraphan Methadilokkun is a specialist in diseases stemming from the effects of poisonous chemicals and pollutants, or a specialist in "occupational and environmental medicine" as it is called. There are only about 10 such specialists in the entire country. She earned her degree in this field from abroad and now serves as the president of the Occupational Medicine Association. She has given seminars on this subject to approximately 122 doctors in Thailand. Dr. Oraphan, who has been monitoring illnesses stemming from exposure to poisonous substances from the time of the Seagate Factory incident to the Khlong Toei incident, took an interest in the case of Mayuri Tewiya.

During her studies, Dr. Oraphan has discovered some amazing things in several cases. One involved the death of a 3-month-old boy named Chakraphandi Na Lamphun. He died at the same time as his mother (Duangthida, an employee at the Tokyo Tire plant) and father (Anan Na Lamphun, an employee at the KSS Electronics Plant). Another was the death of a 2-month-old girl named Sudarat Daengchitti, the daughter of Mrs. Amphon (an employee at the Aspeka Thailand factory), who died too. During her studies, Dr. Oraphan learned that 15 people had died from "uncertain causes." Among the 16,000 workers at the 62 plants in the Lamphun industrial estate, many had already begun

developing symptoms similar to those of Mayuri. Doctors at the McCormick Hospital clearly stated that people were becoming ill because of the chemicals.

The findings of Dr. Oraphan were opposed by those responsible at the industrial estate. In particular, Dr. Somchet Thinphonng, the director of the Industrial Estate Authority of Thailand, said that the charges leveled against the industrial estate had been made by "strange people."

Besides this, an attempt were made to "belittle" the views of Dr. Oraphan, who had observed that the workers at the industrial estate had been exposed to chemicals at the plants, by holding a "seminar to review the causes." Doctors from the northern region were invited to attend the seminar, which was held in April 1994. But officials refused to invite "specialists" in this field. At the seminar, it was concluded that most of the workers who had died had died of AIDS. They also assumed that some of the workers had died from other diseases such as meningitis, leukemia, streptococcal sore throat, heart attack, pneumonia, and so on.

Such conclusions and assumptions meant that the industrial estate did not have to take any responsibility for the deaths of the workers. The Japanese plants simply paid small amounts in welfare benefits to the families of those who had died. Furthermore, those who have tried to investigate and gather data concerning the deaths of the workers have been accused of "working for foreigners" to destroy industry in Thailand. The reason is that in the near future, an additional 8.5 billion baht will be invested in chemical and electronics plants in Thailand. This has the full support of the BOI. For this reason, whoever does anything that could create obstacles for this investment are "unpatriotic." This is the same as being an "economic communist." The BOI and the Industrial Estate Authority of Thailand will resolutely oppose such people just like the ISOC [Internal Security Operations Command] did in the past.

The Industrial Estate Authority is waging a fierce struggle against the charges and observations of Dr. Oraphan and private organizations in the north. It has reached the point where it has threatened to sue any newspaper that interferes in this. But the Industrial Estate Authority has not expressed a clear position concerning other charges that have been made. Even though the Lamphun industrial estate was established in 1985, a hazardous waste disposal plant was not built until 1994, that is, 9 years later. The 5-6,000 people who have been affected by the hazardous waste from the plants in the industrial estate have begun to wonder where the plants that produce metal-plated materials, dry-cell batteries, electronic goods, tanning chemicals, and so on have disposed of their hazardous waste during the past 9 years. People who are afraid of the effects of this have begun to investigate this matter on their own. It has been learned that an area near the Ban San-Khayong public reservoir in Makhua Chae Subdistrict, Muang District, which is located near the foothills that slope down to the village, has been used as a dumping ground,

with the result that hazardous materials have seeped into the reservoir. Every time that water overflows this reservoir, the water immediately flows into populated areas. Besides this, near the waste disposal site of Lamphun municipality, Ban Cham Bon, large quantities of silica have been found. In several other places, people have found 200-liter chemical tanks, waste materials of various sorts, and various containers with warnings that these contain dangerous materials that should not be allowed to come in contact with the skin. Such things abound in several areas.

The Industrial Estate Authority has not issued a clear statement concerning these issues. But it has issued a statement about its hopes for the next 5 years. It hopes that investment in industrial activities will enable the 50-60,000 people in the area affected by these hazardous materials to earn an income of 15,000 baht a year, or approximately 1,500 baht a month. The workers at the plants will earn 40,000 baht a year, or approximately 3,000 baht a month. That is a very high income as compared with the per capita income of people living in rural areas far from industrial zones. In some areas, people earn only 3,000 baht a year, or only about 250 baht a month. That is a wonderful dream if the people there choose to risk their lives for an additional 1,000 baht a month.

Industry first established a foundation in this country in 1958 with the firm backing of the World Bank and the International Monetary Fund, or IMF. The "Economic Development Council" was established to support this view. And a plan known as the "First Economic Development Plan" was formulated based on this view. This plan covered the period from 1961 to 1966. An act known as the "Industrial Investment Promotion Act," which established the BOI, was promulgated in 1960."

While action was being taken to develop the economy based on this view, many academics were very concerned about the effects that development would have on society. Thus, by the time of the fifth plan, or the period 1982-1986, they succeeded in having the word "social" added to the name of the development plan. This was called the "Fifth National Economic and Social Development Plan." But even though the word "social" was added to the name, only 3 percent of the state's annual budget, or only about 81 million baht, was allotted for "social" activities. This has been the case year after year.

In 1981, the word "NIC" came into widespread use. NIC, or newly industrialized country, refers to the dream of becoming a "newly industrialized country." Many people in both the public and private sectors dream of that.

The year 1986 was the year in which revenues earned from industrial goods first exceeded revenues earned from agricultural goods, which had always been the foundation of our country, culture, and society. The value of industrial goods reached 124,024 million baht (53.57 percent of total revenues) as compared with

93,804 million baht (40.57 percent of total revenues) for agricultural goods. But while earnings from industrial goods continued to grow every year, "social insurance laws," that is, laws to protect the welfare of the workers in the industrial sector, were not promulgated until 1991, or 4 years after the industrial sector first earned more than the agricultural sector.

Construction on the Mae Mo power plant was completed in 1978, and the Lamphun industrial estate was completed in 1985. But an environmental law was just drafted in 1992, or 14 years after the power plant went into operation and 7 years after the Lamphun industrial estate was completed.

A Hazardous Materials (Chemicals) Act was drafted in 1992, but it has not been implemented because the Ministry of Industry has not yet issued a regulation to identify the hazardous materials used at industrial plants. For this reason, chemicals and chemical waste materials can still be stored at godowns belonging to the Port Authority of Thailand—which resulted in an explosion at one of the godowns in 1991—and the number of godowns will increase.

In 1991, the cabinet passed a resolution on formulating a plan to deal with environmental effects and chemicals. The "Medical Occupation and Environment Institute" was one of the organizations to be included in the plan. But even though this organization was mentioned in this plan, it has not yet been established. There should be at least 700-1,000 medical specialists in this field in a country where industry is expanding at such a rate. But today, there are only 10 such specialists. Another 122 doctors have been given some training, but they are not doctors who have been directly trained in this field.

The Department of Industrial Works was established in 1942. It now has 710 officials and 114 employees at a time when there are at least 200,000 plants and factories nationwide.

The Ministry of Labor was established in 1992. Today, the Plant Safety Inspection Division has 50 officials, who are responsible for monitoring safety at approximately 200,000 plants and factories.

The waste water released into the Phong River by an industrial plant caused damage totaling at least 1 billion baht. But there is still no law that can be used to prosecute the plant. The only law that can be used is the Public Health Act, which calls for a maximum fine of 50 baht on plants that release waste water into a canal or river.

In 1962, a total of 1,000 workers in the industrial sector were ill. But by 1992, this number had skyrocketed to 10 million, and there were 90,000 accidents that year. [passage omitted]

VANUATU

Prime Minister Reiterates Firm Stand on Log Export Ban

BK2806043294 Hong Kong AFP in English
0415 GMT 28 Jun 94

[Text] Port Vila, June 28 (AFP)—Vanuatu will maintain a ban on log exports and cut back licences for foreign companies operating on the timber-rich island of Erromono Prime Minister Maxime Carlot said Tuesday.

"If you added all the logging quotas allowed so far, this would mean that in no time, Erromango would become a desert," Carlot told AFP in an interview.

He said his government would risk legal action for breach of contract over the ban, imposed on June 20 because of mounting concern about exploitation of Vanuatu's natural resources by foreign companies.

European Union member countries represented here officially expressed concern to Carlot over logging in the island state last May.

An estimated 8,000 cubic meters (10,400 cubic yards) of logs is stockpiled at the Erromango port of Ipota after a ship from Hong Kong was forced to leave the island state's capital Port Vila without its cargo.

Carlot denied any official protest had been received from the companies. But said he had suggested to them that they bring the facilities to mill the logs here. "If they did that, they would gain in the long run," he said.

He met officials from the logging companies currently licensed to operate on the southern Vanuatu island, two from Malaysia, one Chinese and a Malaysia-Vanuatu joint-venture.

"At one stage, quite a few ministers came to tell me that such and such a company was bad and that this other one was good and now, there are four companies licensed to operate on Erromango and export the unprocessed logs."

Carlot said according to new government policy guidelines, Malaysian company Parklane, forced last week to suspend operations, would be allowed to log 15,000 cubic meters a year. Two others, Pacific Veneers and Erro Lumber, would be allowed 5,000 cubic metres each.

The Chinese-based Kingwood company would be denied the right to log on Erromango and would have to negotiate on another island.

"I know some companies won't be happy and will put the pressure on us to obtain what they want," said Carlot.

"But as long as I'll be here, they won't get their way. By doing this, I think I'm protecting the future generations."

CZECH REPUBLIC

Minister Presents 1993 Environment Report

AU0607110194 Prague LIDOVE NOVINY
in Czech 1 Jul 94 p 2

["(ovs)"]-signed report: "The Environmental Situation in the Czech Republic"]

[Text] Prague—There was improvement in some spheres of the environment in 1993. Conversely, in others the situation worsened, or often showed stagnation, Vladislav Bizek, deputy minister of environment, said yesterday. According to the recently completed annual report on the situation in the environment in the Czech Republic in 1993, the situation improved in the sphere of energy generation, processing industry, and transportation, mainly as a result of the phasing out of production in the period 1990 to 1992. A slight drop in the content of sulfur dioxide and dust in the atmosphere was recorded. Conversely, nitrogen oxide emissions increased. The contamination of surface waters slightly decreased due to lower industrial pollution, smaller agricultural output, and the operation of new effluent treatment plants. The content of toxic metals in agricultural soil also dropped below the fixed limits. High-level contamination by toxic metals was found in Prague: The concentration of lead and cadmium exceeds the limit by a factor of between two and five. The principles of state policy until 1996 are: A permanently sustainable development, preliminary prevention, the principle that "the polluter has to pay," the principle of the best available technology, and the principle of a socially acceptable extent of ecological risks. By 2005, the OECD countries' standards for the elements of the environment for 1990-1991 should be reached.

POLAND

Contamination of Soil, Water by Soviets

94P20906A

[Editorial Report] The extensive environmental damage left behind by Soviet forces at their former bases in Poland was detailed in a 26 May POLSKA ZBROJNA article by Beata Zylonis titled "The Post-Soviet Ecological Desert." Zylonis wrote that some areas in Poland are so saturated with petroleum left behind by Soviet troops that farmers refer to them as "Kuwait." Some of this pollution can be traced to leaky pipelines and storage containers, but it is also charged that, before withdrawing, Soviet units deliberately poured out fuel that they could neither sell nor take with them. Zylonis said that the worst petroleum pollution is found in the area around the former Soviet air base at Kluczewo, near Szczecin in northwestern Poland, where the amount of petroleum in the groundwater is estimated at 60,000 cubic meters. The petroleum is reportedly moving in the direction of a Szczecin drinking-water reservoir, which it is expected to "irrevocably" pollute within two years.

In addition to the Szczecin area, the worst pollution in Poland is found at other sites along the Baltic coast, notably near Bagicz, Duninowo, Swinoujscie, and Borne-Sulinowo,

according to Zylonis. In addition to petroleum in the soil, these areas are contaminated by chemical warfare agents and by "Samina," a "highly toxic" rocket fuel.

In Silesia, Zylonis reported, heavy metals and toxic chemicals have been found to be leaching from former Soviet bases into the groundwater of the areas around Swietoszow and Szprotawa. Levels of lead 310 times in excess of the accepted norm have been found in water in this area, while amounts of chromium have exceeded safety standards by as much as 600 times. In addition, phenol, for which there is no standard in Poland, has exceeded the German norm by 69,800 times. Zylonis called this "the most shocking" revelation due to phenol's carcinogenic properties. In the Swietoszow area, PGB (polychlorinated biphenyl), an internationally banned insecticide, has also been discovered.

Besides various forms of chemical contamination, explosives left behind by the Red Army are another hazardous legacy of Soviet occupation, added Zylonis. Many forests were used as firing ranges, and stocks of ammunition and scattered unexploded shells have been found there. Even antitank mines have been located in a lake near Borne-Sulinowo.

Villages To Be Paid To Store Nuclear Waste

LD2606214694 Warsaw TV Polonia Network in Polish
2000 GMT 26 Jun 94

[Text] Parishes will be paid from the State Atomic Agency [PAA] budget for storing nuclear waste in accordance with the new version of the atomic law, which was unanimously adopted by the Sejm.

Correspondent Malgorzata Wisniewska: Radioactive waste is produced not only by nuclear power stations and research reactors, but is also a by-product of radiology and the production of certain medicines. According to the PAA, nuclear waste dumps do not constitute a hazard to the environment. [video shows: radiological hospital equipment]

[Begin recording] **Prof. Jerzy Niewodniczanski, PAA chairman:** This is the first condition. All waste, and above all nuclear waste, must be stored in such a way that it cannot have any harmful effect on the environment. [end recording]

Wisniewska: The largest dump is in Rozan. For three months now the authorities of this typical holiday village have been protesting against the storage of waste in their parish. In accordance with the new law, the money for making a dumping site available by the parish will be provided in compensation for the loss of its good name [sentence as heard]. [video shows: industrial site surrounded by wall, guarded by uniformed men]

[Begin Niewodniczanski recording] The issue is not in buying health for money, not any Judas' silver, but payment for the fact that losses have been incurred, for the psychological aspects of the problem. [end recording]

Wisniewska: From now on parishes will find it worthwhile to store waste. But the inhabitants of Rozan are of a different opinion.

REGIONAL AFFAIRS

Southern Cone Environmental Issues

PY2506/000994

[Editorial Report] The following is a compilation of reports on environmental issues monitored through 22 June.

BOLIVIA

Industries are dumping waste and sewers are discharging into the Pirai River in Santa Cruz Department causing increased levels of contamination. This was reported to the press by experts who visited the township of Montero. Large and small industries, including breweries and sugar mills, dump chemical waste into the river. Pollution killed thousands of fish 12 days ago. (La Paz PRESENCIA in Spanish 12 Jun 94 Section 2 p 4)

The Cochabamba Chamber of Industry has warned that the new forestry law will harm the entire lumber industry because it considers settlers to be the owners of the forests. These forests could disappear within 10 years if uncontrolled deforestation continues. Industrialists noted the need to review the law to guarantee the sustainable exploitation of lumber in a mid and long term by selling concessions in the forest areas to legally established sawmills. Alberto Escalante Mogro, the Regional Forestry Development Center president, reported that between 25,000 and 30,000 hectares of forest are being replaced by agricultural products in Chapare. (Santa Cruz EL MUNDO in Spanish 12 Jun 94 Second Section p 3)

The Irrigation System No. 1 manager has reported that the drought is creating a "very critical situation" in the Cochabamba Central Valley. The "Mexico" dam has only 9 million cubic meters of water which is not enough to irrigate the area. The dam has a capacity of 75 million cubic meters. (La Paz PRESENCIA in Spanish 12 Jun 94 p 7)

BRAZIL

Environment Minister Henrique Brandao Cavalcanti, and Industry and Commerce Minister Elcio Alvares on 22 June signed the Brazilian program to eliminate toxic substances that destroy the ozone layer. The document will be submitted to the Montreal Protocol Multilateral Fund which is financing this \$950-million project. The Brazilian proposal will be analyzed late in July. The fund will be used in projects to adapt industries, to replace harmful gases, and to train personnel in the use of new products. (Sao Paulo AGENCIA O ESTADO in Portuguese 2157 GMT 22 Jun 94)

PERU

Poachers have perpetrated a great ecological crime in the Pampa Galeras national reserve in Ayacucho Department. Taking advantage of Pampa Galeras government

officials's negligence, they indiscriminately killed thousands of vicunas between November 1989 and March 1994. The vicunas totalled 52,000 in 1981 but this may now stand at less than 15,000. (Lima EL COMERCIO in Spanish 12 Jun 94 p A1)

URUGUAY

On 17 June, some 150,000 liters of diesel oil was spilled when eight freight cars of the State Railways Administration became derailed in Florida Department, 100 km north of Montevideo. The fuel spilled in an uninhabited area, contaminating fields and streams, and killing many animals. (Madrid EFE in Spanish 2309 GMT 17 Jun 94)

ARGENTINA

Toxic Waste Allegedly Buried in Santiago del Estero

PY3006154794 Buenos Aires PAGINA/12
in Spanish 29 Jun 94 p 13

[Text] Juan Schroeder, a Grand Front constituent assembly member and a Tierralerta environmental organization leader, reported yesterday that 30 metric tons of dangerous pesticides, banned by health authorities, have been clandestinely buried in a small town in Santiago del Estero Province, 50 meters from a school. Schroeder emphasized: "This is the largest toxic waste dump discovered in Latin America." He filed criminal charges against the General Mitre Railway, which carried and buried the compounds, and the ICI [Imperial Chemical Industries] Argentina chemical company. This multinational company reportedly imported the (BHC) [benzene hexachloride] pesticide from its manufacturing plant in the United Kingdom and allegedly marketed it in Argentina under the Gammexane registered trademark.

Tierralerta began investigations into the toxic waste dump eight months ago, following reports by General Mitre workers who were forced to bury the bags containing pesticides. The cargo's journey, however, began much earlier. In November 1988, the 30 metric tons of Gammexane—as may be read in the railway company's bills of lading—were loaded on two cars at the Colegiales station in the federal capital. The cargo was carried from the Colegiales station to the Las Palmas station in Zarate, where it remained for a few months until the neighbors began complaining about the strong odor it gave off. The cars then departed for Santiago del Estero Province. First, they remained in the town of Selva, but complaints by the neighbors again forced the cars to move another 20 km to the town of Argentina in Aguirre Department. "There, engineer Camacho, from the General Mitre Railway tracks and public works department, asked a 10-man crew to dig a two-meter deep and 10-meter wide hole where the workers dumped 25-kg and 50-kg bags of pesticide on 18 June 1990," Schroeder reported. During the burial operation, the workers did not wear protective clothing, gloves, and masks, a mandatory requirement to handle toxic material.

In December 1993, the environmentalist visited the dump site and retrieved a bag. He carried the bag to the University of La Plata for analysis. After remaining buried for four years, the powder had become a paste. Analyzing the powder, the experts discovered a blend of compounds, including various forms of hexachloro-cyclo-hexane (the BHC with which Gammexane was manufactured before the health ban) and DDT [dichloro-diphenyl-trichloro-ethane]. Organochlorine pesticides like BHC and DDT have been gradually removed from agricultural use because of their potential hazard for human beings, through direct poisoning, food poisoning, or contaminated water, and their persistent environmental impact. BHC has been banned in 43 countries. It may cause central nervous system disorders and heart, liver, and kidney dysfunctions. As years go by, BHC may cause various types of cancer.

Schroeder believes that, after BHC was banned in the late 1980's, the ICI company—manufacturing BHC in the United Kingdom and importing it locally—had two alternatives: Reexport the 30,000 kg of pesticide or make them disappear. As BHC had been questioned in many countries, the company allegedly decided to get rid of it. Schroeder said: "It preferred to bury the compounds in a virtually deserted area, with only 300 inhabitants, where no one is aware of their existence."

CHILE

Ecologists Advocate Bilateral Trade Accord With U.S.

PY0107022094 Madrid EFE in Spanish
1814 GMT 30 Jun 94

[Text] Santiago, 30 Jun (EFE)—The Political Ecology Institute (IEP) of Chile today asked the government of President Eduardo Frei for a change of direction in the negotiations for a free trade agreement with the United States, and demanded a national dialogue with the participation of all sectors.

In a declaration released today the Chilean ecologists also said that the establishment of a bilateral agreement with the United States "is the least harmful path in safeguarding the country's labor and environmental rights."

The IEP also reiterated its absolute rejection of the idea that Chile join NAFTA [North American Free Trade Agreement], and recalled that this position is shared by the United Labor Federation (CUT).

The declaration says: "The ecologists are very happy about the failure of the efforts made by the Chilean political-business class to join NAFTA directly."

President Frei met in Washington on 28 June with U.S. President Bill Clinton and other U.S. officials, who expressed their preference for a bilateral trade agreement with Chile.

Although Clinton said he did not have a concrete opinion on this issue, according to the ecologists it is clear that Chile will not join NAFTA, which is made up of the United States, Mexico, and Canada, although the two countries agreed to study a model agreement that includes this possibility at a later stage.

According to the ecologists, a bilateral agreement will allow Chile—and especially the labor groups—to incorporate clauses safeguarding the rights to strike, collective negotiations, and other benefits.

The IEP called on the government to establish a permanent council, with the representation of all the sectors affected by an eventual treaty, to study the pros and cons of the initiative.

The IEP also asked for public regional and sectorial meetings to be held, even allowing for a possible plebiscite if the national community appears divided on the issue.

ECUADOR

Tourism, Fishing Restrictions for Galapagos

Presidential Decree

94WN0307A Quito HOY in Spanish 14 May 94 p 1

[Article: "Ships Barred From Entering Galapagos"]

[Text] "We shall no longer permit the entry of large ships to the Galapagos Islands," President Sixto Duran-Ballen asserted yesterday as he announced the enactment of an executive decree that regulates tourism in the archipelago. The president clarified that the decree does not authorize the entry of deep-draft vessels to the islands, but on the contrary limits to within the bounds of the "technically feasible" the visits of all ships. The purpose of this decree is to preserve the Galapagos as one of mankind's nature reserves.

The president stated that the presence of two ships two days ago with 400 tourists aboard had been authorized in order to assess its ecological impact, and that, having analyzed the results, the decision was made to not permit the entry of large ships to the Galapagos.

The decree prohibits the entry of foreign vessels of medium and deep draft to the Galapagos Islands for the next three years.

Fishing Activities

94WN0307B Guayaquil EL UNIVERSO in Spanish
28 May 94 p 8

[Article: "New Fishing Regulations in Galapagos"]

[Text] Quito—Only nonindustrial fishing will be permitted and only by those fishermen who are members of the Galapagos's different cooperatives and who can show that they have resided in the archipelago longer

than five years, according to one of the provisions decreed by the government under the policy of protecting the natural resources of that region of the country. The decree confines all other fishing activity to the Marine Resources Reserve.

The decree also provides that there shall be no increase in either the number or the capacity of the vessels that have been permanently registered for at least five years in the different port authorities of the insular region or in the General Directorate of Merchant Marine, as of April 1994.

In addition, it stipulates the policy that the use of hydrobiological resources shall be regulated in accordance with the criteria that define the concept of sustained yield, through the enforcement of closed fishing seasons, fishing zones, and fishing periods.

Nonindustrial fishermen will be permitted to market their catch to the continent.

Agency Created

To oversee the carrying out of these provisions, the Subdirector of Fishing is created, based in Puerto Ayora, with jurisdiction and authority throughout the Ecuadorian insular region.

The Subdirector of Fishing, in cooperation with the National Navy and INEFAN [Institute for Reforestation], will set up special programs designed to regulate the use of the Galapagos region's fishing grounds.

On Hotels

The government further designated the Ministry of Information and Tourism, in coordination with INEFAN, and the chair of the Permanent Commission, as the offices empowered to issue authorizations and registries for new hotels and for facilities intended to provide temporary or definitive accommodations, subject to prior study of the Galapagos' tourist capacity. These offices will also be responsible for regulating and stabilizing the supply and demand factors of the tourist industry in the Galapagos Islands in such a way as to

relieve the pressure generated by attractions in high demand, and develop or improve the industry's capacity with respect to alternative attractions not currently being exploited.

And lastly, tours of areas of the Galapagos National Park and of the Marine Resources Reserve by privately operated water craft of national or foreign registry are prohibited without specific authorizations to be issued by INEFAN.

MEXICO

Land Becomes Unproductive Due to Poor U.S. Water Quality

PA0207152394 Mexico City UNOMASUNO in Spanish 29 Jun 94 p 15

[Text] San Luis Rio Colorado, Sonora, 28 June—The Mexican Congress Border Affairs Commission will demand that the U.S. Government supply high quality water to the agricultural valleys in San Luis Rio Colorado, Sonora State, and Mexicali, Baja California State, because 3,000 of the area's 26,000 hectares are unproductive due to the high salinity of the water supply.

Luis Moreno Bustamante, federal deputy and commission member, has said that 100 hectares become unproductive every year because of the salinity of the soil due to polluted water.

He said the commission will continue to pressure "with all its might" for the U.S. Government to send quality water to these agricultural valleys.

He added that on 30 June the National Water Commission (CNA) will deliver a report on the condition of those lands to Congress, which will turn the report over to the International Border and Water Commission (CIDA).

Moreno Bustamante said 172 million cubic meters of water reach the municipality every year via the Sanchez Mejorada channel, 4 km west of this city, and that the water salinity exceeds 3,000 parts per million.

INDIA

Government Finds Unleaded Gasoline Use 'Impractical'

BK0107105194 Delhi THE PIONEER
in English 29 Jun 94 p 9

[Report by G.K. Singh]

[Text] The Central Government's decision to introduce unleaded petrol in metropolitan cities from April 1 next year is a virtual non-starter, according to an expert evaluation by the Ministry of Environment and Forests.

The decision to introduce unleaded petrol along with leaded petrol was taken at a high-level meeting held on June 17, which was summoned by the Ministry of Environment and was attended, among others, by representatives of the oil industry and officials of the Ministry of Surface Transport. The meeting was held to evaluate fuel quality and the alternatives available which would lessen suffocation in the cities.

It has long been the contention of the automobile industry that the problem of pollution from vehicles can be reduced significantly only if the oil industry supplements such efforts by providing eco-friendly fuels and lubricants.

The decision to introduce unleaded petrol was taken as the problem of air pollution in metropolii was worsening. The Ministry of Petroleum and Natural Gas had, for instance, earlier informed the Supreme Court that the introduction of unleaded petrol was possible for Delhi and Bombay, by reallocation and diversion of unleaded fuel from specific refineries.

The Petroleum Ministry had also contended that the total time required for the introduction of un-leaded petrol is about six months from the date the decision is finally taken.

The Environment Ministry, however, foresaw a number of problems. First of all was the problem of the assured supply of un-leaded petrol. The Petroleum Ministry envisaged that while the Bongaigaon refinery would supply un-leaded petrol to Delhi, Bombay would obtain its supply from the Bhara Petroleum Corporation Ltd. Environment Ministry officials, on the other hand, pointed out that any disruption in production in these two refineries could mean stoppage in the supply of un-leaded petrol to the two cities.

They also said that the introduction of un-leaded petrol would have to be synchronised with the development of vehicles with new technology and new engine designs which could entail colossal expenditure. The engines would also have to be fitted with catalytic converters, an imported component which costs about Rs 20,000. The converters are fitted with the exhaust system and neutralises the emission of toxic gases. Only such an effort can have a significant impact on environment, officials aver.

The Environment Ministry is also concerned with the fact that vehicles using un-leaded petrol and fitted with catalytic converters would be at a disadvantage because of their inability to use leaded petrol. Moreover, with only six to eight outlets planned for unleaded petrol in the beginning, owners of such cars would have to travel long distances to fill up their vehicles. Such vehicle-owners would end up incurring extra mileage.

Ministry experts are of the viewpoint that with un-leaded petrol being available only in metropolitan cities, such vehicles would not be able to travel beyond their boundaries. Environmentalists further pointed that the present lot of vehicles would not be able to switch over to un-leaded petrol because of its engine designs. Keeping in view the ground reality, the menace of automobile pollution would continue as it is. What the Ministry is saying is simple: limited scale of the usage of un-leaded petrol is impractical and, hence, a non-starter.

According to Ministry experts, it has also been noted that many of the retail outlets mixed kerosene and other low-priced fractions or petrol along with petrol or diesel, deteriorating, in the process, fuel quality considerably. In addition, motorists were also getting substandard lubricants, which enhanced the emission of particles which were carcinogenic. The spurious lubricants could, however, be checked with the usage of sealed pouches with ISI mark, officials pointed out.

The Central Pollution Control Board [CPCB] had earlier estimated that the use of unleaded petrol significantly reduced the emission of toxic gases and that a separate facility should be available for the supply of unleaded petrol in metropolitan cities for two stroke engines. The CPCB had cited some advantages: First, that refining petrol of Octane 76 is less expensive, and, that use of catalytic converters can also reduce emission of hydrocarbons and carbon monoxide, along with that of lead.

The Pollution Control Board also foresaw several disadvantages. Foremost among them was the cost involved in the creation of a separate line of supply. The CPCB pointed out that low cost of refining might be offset by the cost of creating additional infrastructure. Also, some of the two-stroke engines are designed to use high octane petrol and may continue to do so.

Some interesting suggestions were also forthcoming at the meeting of June 17. An official of the Surface Transport Ministry suggested that the Government should control the plying of vehicles on roads. For instance, while vehicles with even registration numbers should be allowed on one day, odd numbers could ply the road on another day. His contention was that such restriction would force motorists to pool vehicles, thus reducing pollution in the cities.

This suggestion did not find favour with many of those present at the meeting. It was criticised because such a step could be challenged in courts as violative of basic rights.

Another suggestion was that office timings and market timings should be staggered in a bid to reduce peak time traffic and also the pollution level. It was suggested that markets in different areas also could have different timings. A final decision has yet to be taken.

KUWAIT

Agreement Signed With Japanese Firm To Clean Up Oil Lakes

LD0207134694 Kuwait KUNA in Arabic
1253 GMT 2 Jul 94

[Excerpts] Kuwait, 2 Jul, KUNA—Kuwait and Japan signed here today an agreement to carry out a scientific research to clean up the floors of the oil lakes in the Birqan region. [passage omitted]

The agreement for joint cooperation between the Kuwaiti Institution for Scientific Research and the Japanese Center for Petroleum and Energy has stipulated the realization of a scientific project to clean up the floors of oil lakes that were created during the unjust Iraqi aggression in 1991. There are more than 300 oil lakes covering an over all area of around 49 km of the Kuwaiti desert. [passage omitted]

The realization of the three-year project will start next month once an area to start work on is designed by the Defense Ministry. The first stage will be the cleaning up with the help of a Kuwaiti oil company of a surface of one hectare at the Birqan region. [passage omitted]

PAKISTAN

International Smugglers Said Dumping Nuclear Waste

94WN0318A Karachi JANG in Urdu 16 May 94 pp 11
(Supplement)

[Article by Mushtaq Ali Kamboh: "In Balochistan: The Negative Activities of International Smugglers."]

[Text] Pakistani ship-breakers collect old and inoperable ships from all over the world and bring them to the Balochistan coastal area of Gadani which borders Karachi. The ship-breaking industry breaks down ships into raw material. It was disclosed in 1990 that the ships brought to Gadani for breaking were loaded with atomic waste; as soon as these ships enter Pakistan's ocean boundary, the crew dumps the atomic waste into the ocean. It is also rumored that the atomic waste is brought from countries where warfare or atomic experiments have taken place.

Certain Pakistani ship-breakers obtain millions of rupees from foreign maritime countries who are allowed

to dump their atomic waste in Pakistani waters. It has also been learned that now, instead of ship-breakers, organized groups of international smugglers are engaged in this dumping activity. The greater part of Pakistan's coastline is in Balochistan and signs of radio-activity have begun appearing in various parts of Balochistan particularly on the coasts of Gadani, Dam, Sounmiani and Kand. All kinds of fish including rare and valuable fish are leaving the ocean waters around Balochistan. The lack of fish has spread unemployment among Balochistan's fishermen and dozens of fishermen have removed their small boats from the ocean. According to the details surfacing regarding the illicit dumping activity, as yet no incident of atomic dumping has been documented. After reports of atomic waste dumping by ship-breakers appeared in the Pakistan press, high officials of the maritime security agency, which guards the country's ocean boundaries under the supervision of the Pakistan Navy, toured the coastal areas of Hab subdivision but were unable to find any proof that atomic waste had been dumped in the ocean. However, it has been learned that all agencies in charge of guarding Pakistan's ocean boundaries have set up strict surveillance and ships from all parts of the world, especially ships which are no longer in service are being checked thoroughly.

Moreover, proof has now been found that industrial waste was dumped in Pakistani waters particularly in the coastal waters of Karachi, Thatha and Lasbela district (Balochistan). Preliminary investigation has revealed that industries in Karachi and Hab have been burying large quantities of industrial chemicals and waste in the ocean as a result of which ocean fish and other life forms have been migrating on a large scale to water around other countries. It is evident that in Balochistan's coastal waters the supply of fish has been nearly exhausted; in the coastal waters off Gadani where the ship-breeding yard is located, no fish are to be found because of the poisonous chemicals, oil and diesel fuel leaked from ships.

The fast-spreading pollution in the ocean waters of Balochistan has a direct effect on the coastal waters off Karachi. All agencies in charge of controlling pollution should regularly guard the coastal areas. Gadani's ship-breakers should be stopped from discarding waste oil from ships, bits of wood and iron and poisonous chemicals into the ocean. Industrialists also should keep the welfare of ocean life in mind and refrain from discharging industrial waste into the ocean. The Fisheries Department should place fish propagation on an emergency basis and confiscate the launches and boats of fishermen who use banned wire nets. Fishermen who, for the sake of a few rupees, use wire and other kinds of banned nets to sweep the ocean floor should be arrested. Balochistan experts are of the view that if the dumping of industrial and atomic waste and the use of banned nets continue and fish are not allowed to breed, fish life will completely disappear from Balochistan's waters by October.

REGIONAL AFFAIRS

RUSSIA

Caspian Deemed Too Polluted for Human Use
944K1648B Baku ZERKALO in Russian 1 Jul 94 p 3

[Article by I. Askerova: "Physicians Appeal for a Refraining From Bathing in the Sea"]

[Text] In conjunction with the severe pollution of the Caspian Sea, it is recommended that the population of the city of Baku refrain from bathing in the sea. Ali Nuralibekov, chief sanitation physician of the city and the director of the Baku City Center for Disease Control and Hygiene, informed a ZERKALO correspondent of this.

Since April of this year, sanitation and disease-control work has been performed at all beaches of the city. Based on the results of research, it has been established that not a single beach meets sanitary-hygienic and sanitary-technical requirements, in view of the fact that engineering facilities had been covered with water and destroyed.

A. Nuralibekov noted: "At the same time, the quality of sea water has been systematically monitored by a laboratory on disease-control indicators since May of this year. The results obtained in the course of the testing held do not inspire optimism."

In A. Nuralibekov's words, the content of pathogenic flora exceeding the norm by factors of two to 33 has been noted in sea water. The Shikhovo, Primorskiy, Karadag, and Mardakan beaches are the most favorable. At the same time, the content of phenol exceeding the norm by a factor of three and of refinery products—by factors of two to nine has been noted in sea water at the Novkhany and Bilgya beaches.

As the director of the Baku Center for Disease Control and Hygiene noted, "The reasons for the intensive pollution of sea water are due to the discharge of untreated industrial and household sewage, including that by a number of localities and industrial facilities in Karadagskiy, Azizbekovskiy, Sabailskiy, Sabunchinskiy, Surakhanskiy, and Binagadinskiy Rayons. To this day, a number of localities and enterprises in these rayons do not have sewage treatment systems. Despite repeated warnings, the Puti Spinning and Knitwear Association, which does not have a sewage treatment system, and the Baku Production Association of Tanning Enterprises, which uses various acids and chemical dyes to process hides, discharge untreated sewage right into the sea."

"Besides, there are industrial facilities that have been dumping waste directly into the sea for decades, such as the Kishli Machine Building Plant, the Baku Machine Building Plant, the Baku Worsted Combine, the Worker of Baku Machine Building Plant, and the Baku Oil Industry Equipment Plant."

"As I appeal to the citizens of Baku, I call on them to refrain from bathing in the sea," said A. Nuralibekov.

Commission Examines Legal, Illegal Import of Toxic Waste

94WN0313A Moscow ROSSIYSKIYE VESTI in Russian 27 May 94 pp 3-4

[Unattributed article based on materials provided by Vladimir Karasev, secretary of the Interdepartmental Commission on Ecological Safety of the RF Security Council; Svetlana Stepunina was present at the commission meeting: "Waste Is Imported Illegally and Officially"]

[Text] About 7 billion tonnes of waste are annually formed in Russia, of which only 2 billion tonnes (28 percent) then find application in the national economy. The accumulation in disposal areas and dumps of toxic and ecologically hazardous waste, the total quantity of which is 1.6 billion tonnes in the country, is cause for special alarm.

The situation with the formation, reclamation, decontamination, storage, and burial of waste leads to the emergence of irreversible processes of degradation of the natural environment and poses a real threat to the population's health and to future generations.

In such a situation, problems of preventing the import of toxic waste from various countries into our territory will have to be solved. At the same time, it must be taken into consideration that the threat of pollution comes from the import of both hazardous waste and of goods containing substances hazardous to the environment.

In 1992-1994 repeated attempts were made to import into the Russian Federation waste, including toxic, from industrially developed countries for the purpose of processing or burial, and illegal import was also carried out. The decline in the efficiency of control over the foreign economic activity of enterprises and organizations is one of the factors contributing to the penetration of toxic waste into Russia's territory.

Here are several examples. An Austrian firm, Glassimpex, through the mediation of the Novorossiysk Stremekologiya Scientific Production Association, has made an attempt to bury more than 7 million tonnes of construction and household waste in the country's various regions. This "freight" has already arrived in our country.

The Petrovka Joint-Stock Company (Moscow) addressed a proposal to the Department of Marine Transport from a German-Austrian firm, TET AG, for the construction on the coast of the Gulf of Finland of a plant (on an area of 25 hectares) for the processing and purification of earth brought from Germany in the amount of 100,000

tonnes monthly (!). The firm was prepared to pay 40 Deutsche marks per cubic meter of earth processed by the plant.

The president of a Russian ecological company, Ekorad, sent a letter to President B. Yeltsin. He proposed that a contract be concluded with Western firms for the burial of radioactive waste on islands of the Arctic and Pacific Oceans. The American firm U.S. Ecology participated in the study of the project.

A representative of another American firm, Tradeway Inc., addressed a proposal to the administration of Kolpinskiy Rayon (Leningrad Oblast) for the conclusion of a contract for the delivery of chemical waste from France, Germany, and Italy for burial on the Krasnyy Bor training ground. Plans were made to import waste of pharmaceutical production and the chemical industry, slime from purification installations, earth containing mercury, and drugs with an expired application date.

Recently a tendency toward the conclusion of transactions for the import of hazardous waste and its reclamation under the pretext of the realization of foreign economic projects for the reuse of various types of waste for the purpose of obtaining useful substances has begun to manifest itself more and more distinctly. As a rule, such joint projects of Russian and foreign entrepreneurs are not studied profoundly, and therefore find support in local bodies of power. For example, last February bodies of the State Committee for Sanitary-Epidemiological Oversight uncovered a case of pulp waste burning in the territory of the settlement of Avsyunino in Orekhovo-Zuyevskiy Rayon in Moscow Oblast. On the basis of a contract with a German firm, Unden Maschuen, the Plastik Scientific Production Association received toxic waste as textile production waste for the purpose of processing it into consumer goods. The Scientific Production Association received pulp waste in the amount of 140 tonnes. Accompanying documents indicated that the freight was... humanitarian assistance. An expert examination established the presence of lead, nickel, manganese, cadmium, mercury, and arsenic in this assistance.

The activity of foreign and Russian firms, which try to organize illegal channels for shipping toxic waste to Russia, represents a special danger to the health of nature and man. For example, it was intended to carry out a license-free import from the FRG to Kaliningrad of a large batch of industrial goods consisting mainly of synthetic packaging materials. It was planned to transport the waste by the sea route with the participation of a number of Lithuanian and Latvian firms.

Waste imported with the permit of the RF Ministry of Economics from France and Holland through the mediation of an Israeli firm, Lev Gubenko, should also be mentioned. In February 1994 waste arrived under the guise of raw materials for the Yuzhuralnikel Combine in the territory of Orenburg Oblast. Upon examination the

most hazardous substances were detected in the "raw materials." However, they have not yet been thrown out of the country. To this day railroad cars with hazardous freight roam throughout Orenburg Oblast...

The Basel Convention "On Control of Transboundary Movements of Hazardous Wastes and Their Disposal" is the basic international legal document regulating problems of toxic waste management. The fact that Russia did not become a party to the Basel Convention does not enable it to fully participate in the existing system of international control over the handling of hazardous waste. In Russia a state body for control of transboundary movement and disposal of waste was not determined, a special center responsible for information support for the indicated activity was not organized, and legal, administrative, and other steps to control the realization of the provisions of this convention were not taken.

Several legally binding ordinances, which partially regulate problems concerning the transboundary movement of toxic waste and its disposal, are now in effect in the territory of the Russian Federation. They include the decree of the Council of Ministers-Government of the Russian Federation dated 6 November 1992 "On Licensing and Establishing Quotas for the Export and Import of Goods (Jobs and Services) in the Territory of the Russian Federation," in accordance with which the export and import of industrial waste are carried out according to licenses of the RF Ministry of Foreign Economic Relations, the decision to issue which is made by the RF Ministry of Environmental Protection and Natural Resources.

Pursuant to the indicated decree the RF Ministry of Environmental Protection and Natural Resources issued an order dated 3 March 1993 approving the statute "On the Procedure for the Adoption of a Decision on the Issue of Licenses for the Export and Import of Industrial Waste." This statute regulates problems of export-import operations with industrial waste pertaining to the category of secondary material resources and intended for processing and reclamation. However, the order does not apply to the group of toxic waste falling under the obligatory regulation of the Basel Convention.

Documents for ratification of the Basel Convention "On the Control of Transboundary Movements of Hazardous Wastes and Their Disposal" were coordinated by the RF Ministry of Environmental Protection and Natural Resources with 10 ministries and departments, including the Ministry of Foreign Affairs, the State Customs Committee, the State Committee for Sanitary-Epidemiological Oversight, the Ministry of Foreign Economic Relations, the Ministry of Finance, the Ministry of Economics, and others, and sent to the Russian Federation Government. Therefore, in terms of top-priority measures, the ministries and departments interested in protecting the territory of the Russian Federation against the import of toxic waste must:

- continue elaborating the draft of national legislation on hazardous waste management, a number of the articles of which must contain provisions determining the procedure for the collection, transportation, storage, and burial of waste in accordance with the requirements of the Basel Convention and the Second Meeting of the Conference of Parties to the Basel Convention (Geneva, 21-25 March 1994);
- realize the mechanism of control over execution of the provisions of the Basel Convention, which includes measures of legal, economic, and administrative regulation of problems of toxic waste management;
- coordinate the principles of interaction of environmental-protection, customs, and law enforcement bodies of the Russian Federation with similar services in close and distant neighboring countries;
- work out the procedure for compensation for economic damage in case the territory of the Russian Federation is used for the reclamation, burial, or through carriage of hazardous waste;
- introduce supplements and changes ruling out the possibility of importing waste and goods which pose a threat to the country's ecological safety into the "Procedure for the Issue of Permits for the Import of Individual Goods Into the Russian Federation for the Processing and Export of Compensatory Goods in 1993" approved by the Ministry of Foreign Economic Relations, the State Customs Committee, and the Ministry of Finance.

The discussion of materials submitted at the commission meeting, as well as of the draft decision, was very energetic, sharp, and exceptionally contradictory. In our correspondent's view, not only the dangerous tension of the problem but also its chronic nature were manifested. For example, the opinion that at the meeting of the Interdepartmental Commission one could have simply returned to the meeting of the previous Council on Ecological Policy under the RF President, which was held on 25 November 1992, was stated logically. At that time the agenda was determined somewhat more broadly: "On the State of Affairs With the Reclamation, Decontamination, and Burial of Toxic Waste." However, the present question lay within the range of discussion. This is how it sounded in an excerpt from the record of proceedings: "The processes of disintegration in the economy occurring in Russia and other CIS countries and the reduction in the efficiency of control over foreign trade activity are contributing to the conclusion of agreements between foreign firms and Russian organizations and enterprises on the burial of household and toxic industrial waste in the territory of the Russian Federation, as well as its illegal import. This occurs not only owing to the need to obtain currency by any means, but also owing to the milder, as compared with leading capitalist countries, ecological legislation. According to information available at the RF Ministry of Security,

there are criminal structures specializing in the illegal import of toxic waste into the countries of Eastern Europe."

As you see, only the reference to the presently nonexistent Ministry of Security is obsolete.

And so the participants in the discussion were perhaps right. They stated that it would have been more advisable "to look through" the decision of the previous conference and to clarify who out of the responsible people fulfilled (or rather did not fulfill) what, and to hold these responsible people accountable. And strictly, at that.

However, how to hold the former Supreme Soviet, which "bungled" such a necessary law, accountable? And is there confidence that the present Duma will find the time to adopt legislative acts on toxic waste? The doubts of the participants in the discussion are also shared by the correspondent who was present.

Yes, for the time being inside Russia the problem of its waste is being solved both slowly and poorly. Seven processing plants under construction have never become a sector. But it is necessary—for processing and burial. As in tiny Finland, for example, which accepts waste even from Australia and processes it without damage to the health of people and nature. However, those that counterpose "their" waste to "foreign" waste are hardly right. They say that there is so much of the first (7 billion tonnes) that it is not worth discussing the second (only 2,000 tonnes). It is, because it is a question of the thought-out and refined policy of a number of developed states: To place all dirty and harmful production facilities in third countries. To export waste there. Waste makes up 18 percent of the total export of the FRG and 20 percent of the American export. It goes to Africa, South America, and Belorussia [Belarus]. It also goes to us, to Russia.

In this situation, which is undoubtedly humiliating for us, in an atmosphere when attempts at import are growing, the idea expressed by some participants in the conference—a total ban on the import of waste into the country—may seem attractive: "We must ask the president to issue such a prohibitive edict!"

However, the wise discretion of the opponents of this idea suggests another approach. Import for burial—yes, this must be prohibited and Russia's transformation into a Western dump must be prevented. However, is it correct to give up waste processing? Is it not more sensible, developing a system of industrial processing and taking advantage of our high technologies (for example, in the defense industry), to permit the import of waste according to strict regulations? This, after working it out and issuing licenses. After all, some waste is the richest source of valuable industrial components.

The discussion ended on this reflecting note. It was decided to further modify the decision. Participants in the conference greatly supported the actions of the

General Procuracy, which this February issued a directive to all procurators on the criminal responsibility of managers who permit the import of toxic waste into Russia.

Commission Says Environmental Pollution 'Very Serious'

*LD0107130794 Moscow INTERFAX in English
1107 GMT 1 Jul 94*

[Text] The problem of environmental pollution in Russia is very serious, the chief of the ecological safety commission of the RF's Security Council Aleksey Yablokov has said.

President Yeltsin has thrice made decisions to empower the state nuclear supervision authority GOS-ATOMNADZOR to inspect any nuclear facilities without exceptions, however, this has not been done yet due to resistance from the defence and atomic energy ministries.

Yablokov believes that it would be necessary to finalize maps of radiation security. So far there are maps covering only half of Russia's regions.

Yablokov described the storage and processing of radioactive waste, in particular, those in the Far East as one of the worst problems. "Japan has taken interest in resolving that problem, however, it is prepared to give the money on the condition the processing facilities will be developed by Japanese firms."

Yablokov said that "products of Russia's research and development are not worse, but even better than Japanese ones, yet they have been left aside." Yablokov believes that the Russian government must speed up the adoption of a program to dispose of radioactive waste, and parliament, of appropriate legislation.

"We are the sole country with a nuclear power industry that does not have nuclear legislation," Yablokov said.

WWII Lewisite Dumps in Udmurtia in 'Dangerous' Condition

*PM0107155094 Moscow IZVESTIYA in Russian
1 Jul 94 p 4*

[Article by Sergey Kudryashov: "Vesicant Depot. Chemical Weapons From the Time of the Great Patriotic War Are Still Posing a Danger to Inhabitants of Udmurtia, Bashkiria, Tataria, and Perm Oblast"]

[Text] Poetic servicemen dub this toxic substance "death dew." And there can be no doubt that lewisite fully deserves this second name.

The inconspicuous depot in the small Udmurt city of Kambarka, on the banks of the Kama, would have continued to exist peacefully for many years more if it were

not for the Americans. For over 40 years the local inhabitants were convinced that there was nothing more dangerous in it than canned stew. But with the beginning of perestroika, international inspections of installations where toxic substances are kept began. An invasion of generals in military helicopters, who started regularly using the local stadium as an airfield, seemed suspicious to the inhabitants of the provincial city. In 1989 only a pretext was needed to demonstrate the force of the people's power. Inquiries flooded into every imaginable body.

Little by little, the true state of affairs began to come to light. It shocked even worldly-wise skeptics. A total of 6,400 tonnes of toxic substances, stored in tanks which, to put it mildly, have seen better days.

Ten millimeters of metal several decades old separates the lewisite from the villages and settlements in the area. Nearby is a major waterway—the Kama. We can but guess whether all this muck will explode on its own or whether someone will help it to explode.

There is no need to talk seriously about any possible terrorist acts. The installation is carefully guarded. A lucky few, who have passed through all the circles of hell of the Russian Federation Ministry of Defense, do manage to get into the restricted area and see the five buildings, 20m by 40m, each of which contains 16 80-tonne tanks.

A cavalier solution to the problem (in pure perestroika spirit) was, as usual, based on popular sentiment. The people stated bluntly: Since you brought it here, you remove it. The cogwheels of the then mighty state mechanism began to turn. And it was only later that someone realized that they would not be able to find anyone who would want such a dangerous load to cross their brand new sovereign territory. Tataria [Tatarstan] said: We would lie down on the railtracks rather than let it in. And anyway where can you take 6,400 tonnes of muck such as lewisite? Who needs it?

The answer is not as obvious as it might seem. Vesicant toxic substances, it turns out, are a valuable source of metallic arsenic. The very substance that is selling like hot cakes in the electronic industry. The Americans, incidentally, at one time insisted that lewisite should be burned.

How many projects, concrete plans, disputes, and scandals there have been. But the lewisite is still there. Speaking of possible optimistic ways of solving the problem, in the next five years it could be processed and recycled right there in Kambarka. The Russian conversion committee, together with the Udmurtia Council of Ministers and the military-industrial complex scientific-research institute, have elaborated a technology for obtaining this metallic arsenic. But, according to specialists, this kind of production is unecological. That is, even if the technology is strictly observed, which, with today's customs, is highly doubtful, a lot of filth will be scattered in the environs and the Nizhnekamskiy reservoir will suffer.

If you look at things more soberly, then it would be good to move the lewisite from the old tanks, which are in a critical state, into new ones in the next few years (!). But it would be extremely difficult to do even that. Specialists from Udmurtia, Bashkiria [Bashkortostan], and Perm Oblast, who are conducting joint environmental monitoring of the project, have so far been unable to find an acceptable solution.

Since 1989, the situation concerning the lewisite has not changed qualitatively. Just as it did not change in the 40 years before that. In the past six months, no visible advances have been observed at all. Pigs might fly... Will we really have to wait for a serious emergency, which we will then have to overcome through heroic endeavors?

There is no point in dramatizing the situation. The lewisite may not make its presence felt for many years yet. But 1-cm-thick metal from the time of the Great Patriotic War can scarcely be considered reliable protection for the inhabitants of three Russian Federation republics and one oblast against the "death dew."

Data Released on Drinking Water, Air Pollution

LD0107165894 Moscow INTERFAX in English
1516 GMT 1 Jul 94

[Text] About half of Russia's population is drinking poor quality water, according to data released by the country's Environment Ministry.

As a result, every third Russian annually contracts a gastric disease, said a document cited at Friday's meeting of the ministry's senior officials called to discuss a draft report analyzing the causes of the situation.

While the daily consumption of water in Russia varies from 24 liters in the countryside to 350 liters in large cities, 70 percent of the country's rivers and lakes have ceased to be sources of good drinking water. To make matters worse, about 90 percent of centralized water works fail to meet the necessary hygiene standards, while the equipment at 40 percent of systems supplying drinking water is badly worn away.

The poor state of the water system and industrial pollution cause damage of 6.5 trillion rubles a year, according to the Environment Ministry.

The ministry's top officials also discussed a draft report on the general state of the environment in Russia in 1993, a document which says that, although last year the discharge of toxic waste into the atmosphere was 12.7 percent down on the 1992 level, that did not on the whole reduce air pollution in the country. Moreover, the number of towns and cities where the acceptable average annual level of air pollution was surpassed rose from 171 in 1992 to 231 in 1993. Those towns and cities are inhabited by a total of 64 million, or 43 percent of Russia's total population.

The nuclear chemical industry alone is producing waste whose total radioactivity reaches 2.7 billion curies.

Erosion and other forms of soil deterioration have reduced farm land area in the past eight years by 6.8 million hectares, the draft report said.

Far East Loggers Show Greenpeace No Sympathy

PM3006133594 Moscow IZVESTIYA in Russian
28 Jun 94 p 5

[Report by Natalya Ostrovskaya: "'Hyundai' Concern Destroying Ussuri Taiga"]

[Text] Vladivostok—"In the Maritime Kray forests are being destroyed by the most barbaric method in the world." That was the conclusion of Tvilli Kennon [name as transliterated], leader of the "Greenpeace" ship's Far East expedition. On returning to Vladivostok after inspecting the "Svetlaya" timber procurement joint venture, his colleagues announced that it was no accident that the "Greenpeace" had begun its annual tour in the Maritime Kray.

Two years ago another ship belonging to this international environmental organization, the "Rainbow Warrior," paid a visit to "Svetlaya" the settlement of where, in keeping with the Greenpeace tradition of active protest, it prevented a barge carrying Maritime Kray timber from leaving the bay.

It was written up in the newspapers at the time. Now we have a second inspection.

How many cubic meters of timber have been cut and shipped abroad by the "Svetlaya" joint venture's hyperactive partner, the South Korean Hyundai corporation, is probably known only to those privy to this terrible commercial secret. All we know are a few unofficial data, established by Greenpeace. An area of 59,000 hectares of forest has been totally cleared. Greenpeace's warriors believe that the cutting down of forests in Maritime Kray has been carried out on an unprecedented scale. And whereas here, in the Maritime Kray, one cubic meter of timber costs the purchaser 20,000-30,000 rubles [R], the same cubic meter is tens of times more expensive in other countries.

The staggering difference in prices has had no effect at all on the life of Svetlaya and other population centers in Terneyskiy Rayon. What has the Hyundai corporation not promised the local people, who, incidentally, only learned of the establishment of the major joint venture when freighters carrying logging equipment started appearing in their bay. Rigorous monitoring of the joint venture's activities and model reforestation were guaranteed. New kindergartens and other social benefits were promised. But the promises got no further than a contract. They do observe, however, as an absolute rule the Russian proverb: "The further you go into the forest, the more firewood you get."

Greenpeace is now able to show anyone who wants to see what is happening in reality. Its latest expedition to the region of Svetlaya settlement, which is 800 km from

Vladivostok, was captured on video. The pictures are more eloquent than any words or figures. Where only recently you had the Ussuri taiga you now have a bare wasteland of thousands of tree stumps. What had been growing here is now a graveyard of felled trees stretching as far as the eye can see, which no joint venture would seem to be capable of transporting. The picture is no less awful than the site of the military dump explosion near Novonezhino. In that case the settlement cum way station with the unassuming name "Kilometer 53" came off worst. Here, at the scene of the loggers' crime, you have a large pile of dead tree trunks also at the 53-km mark on the road out of Svetlaya. A grim association. As the video unfolds you get a graphic guide to progressive forest use. The work of a South Korean felling machine. But its activities extend beyond mere felling. It cuts down a mighty cedar, lays it in a horizontal position, strips it, as you might a carrot, of all big and small branches, and carefully places it in a pile. The whole process takes 10-15 seconds.

So, in this progressive way, everything gets felled—from cedar saplings six centimeters in diameter to old trees. The taiga is not only bare but is covered in indelible oil stains. The video shows a veritable lake of inflammable material. They abandoned a tank truck in the taiga and 16 tonnes of petroleum products leaked onto the land...

What did the members of the "Greenpeace" crew do? Fifteen of them chained themselves to the workaholic Korean machinery and halted the production process for several hours. Alongside the chained activists stood their friends carrying banners urging Hyundai to stop what it was doing.

"This protest action is meant to draw the attention of the Maritime Kray authorities and the Russian government to the barbaric goings-on in the Ussuri taiga," Sergey Tsyplenkov, the Greenpeace Moscow coordinator, said.

But the authorities—local and central—make it clear that they do not like this kind of romantic extremism. In the ports of Vladivostok and Svetlaya the crew encountered problems. The Greenpeace privateers got a taste of the Maritime Kray border guards' unexpected severity.

Svetlaya settlement was not entirely hospitable either. Local opponents of the protectors of the environment had put up warnings on the walls: "No contacts with Greenpeace." The fighters for a clean environment did not meet with much sympathy at the kray administration. One senior official stated that, despite the gross violation of land use found during the "Greenpeace's" inspection, the official authorities do not possess at the moment a single document confirming these violations. A very eloquent commentary on the pictures taken by the expedition.

Official Views Forest Ecology Problems

PM2806104194 Moscow ROSSIYSKIYE VESTI
in Russian 24 Jun 94 p 4

[Article by Vladimir Karasev, responsible secretary of the Russian Federation Security Council Interdepartmental Commission for Ecology: "From Space We Can See How Russia Is 'Growing Bald'"]

[Text] At first glance, particularly if you use Russian statistics, the situation in our forests contains no threat of ecological danger. For instance, the Russian Federal Forestry Service reports that the area of land covered by forest has increased by 6 million hectares over the past five years. But at the same time in Kemerovo, Perm, Vologda, Tomsk, and Tyumen Oblasts and in Buryatia there has been a considerable reduction in areas covered by forest.

The state stocktaking of the forest stock (1993) showed that the area of tree crops of all ages which have died or been written off, including those recorded before 1988, was 1.7 million hectares over five years. The main reasons for destruction were delayed care and choking with soft-leaved [myagkolistvennyye] species, damage caused by livestock and wild animals, unfavorable climatic factors (waterlogging, lack of moisture, drought, frosts), and forest fires.

The volumes of timber procurement for primary use have been drastically reduced in recent years. Whereas in 1988 some 325 million cubic meters were procured, in 1993 only 174 million cubic meters, or 46 percent of that amount, were procured. The volume of timber use was comparable with the lowest level in the postwar period (155 million cubic meters in 1947 and 184 million cubic meters in 1948).

Forest utilization involves substantial losses of timber and incomplete felling (the figure in 1993 was 4.9 million cubic meters). In addition to the economic damage this leads to the devastation of forests, creates an additional danger of fire, and promotes the emergence of sources of pests. The largest quantity of timber left behind is at the Siberian and Far Eastern felling areas.

With the transition to market relations and with the change in forms of ownership there has been a substantial increase in the number of forest users and the damage caused by violators of forestry legislation has increased.

Instances of the export of timber and its sale at prices below world prices have become widespread. According to the figures of the Russian Ministry of Internal Affairs, in 1993 alone the illegal export of 157,400 cubic meters of timber and lumber was prevented.

The state forest conservation service has ascertained that the number of cases of illegal felling in Russia increased 180 percent in 1993 compared with 1992 and the volume of illegally felled timber rose 30 percent. Thus, according to the organs of state control over forests in the republics,

krays, oblasts, and autonomous formations, the use of timber resources by joint ventures, partnership, joint-stock companies, and other entrepreneurial structures is being managed unsatisfactorily. In Maritime Kray, for instance, in 1993 according to the results of an official inspection of felling sites, timber procurement workers had thrown away 95,000 cubic meters at felling sites while in Tomsk Oblast the figure was 146,000 cubic meters.

The procured timber is sent for export, mainly in rough log form, and is mostly from conifers. Cases have been revealed of the illegal export of timber using fake copies of timber felling certificates issued by the Roslesprom [expansion unknown] multipurpose enterprises (Maritime Kray, Tomsk Oblast) and the illegal procurement, sale, and smuggling abroad of roots and seeds of rare and endangered types of plants (ginseng, eleutherococcus, and others).

The situation is aggravated by the lack of legal protection for state forestry protection workers against attacks on their lives, health, and property by forestry law violators. The lack of centralized budget funds and the failure of the Russian Ministry of Finances to allocate funds for the acquisition of firearms makes it impossible to supply the state forestry protection workers with the means for self defense. In 1993 alone armed forestry law violators attacked 15 people and of these six were killed. In January this year a Moscow Oblast forestry establishment director was killed, in February the Penza forest administration chief was killed, and in April an Ingush Republic State Forestry Committee timber industry worker was killed.

In the Russian Federation 56 percent of agricultural land is subject to water and wind erosion. Processes of the destruction of arable land and the formation of quicksands and gullies are advancing. The average annual increase in eroded land is reaching 0.4-0.5 million hectares and the increase in gullies is from 30,000 to 150,000 hectares!

Proceeding from scientifically substantiated calculations it is essential to have 14 million hectares of protective forest plantations, but in fact just 2.9 million hectares have been created. The volumes of creation of protective forest plantations envisaged by the state comprehensive program for increasing the fertility of Russia's soils, approved by the Russian Government 17 November 1992 decree no. 879, were fulfilled by two thirds in 1992-1993. Compared with the average annual indicators for 1988-1990 they declined 50 percent.

At the pace of work which has taken shape as of now, even within the framework of the state comprehensive program for increasing soil fertility in Russia adopted by the government in November 1992, the target that has been set can be achieved in no less than 100 years.

Forest fires cause great damage to Russia's timber resources and environment. In the regions of Siberia and the Far East they are often of a global nature.

Over the past five years there have been 122,800 forest fires in Russia, covering 5.1 million hectares of forest. Some 132.1 million cubic meters of growing wood was burned and damaged and 0.3 million cubic meters of felled timber was destroyed.

Traditional measures for firefighting do not produce the desired results with large distances and bad roads. Hiring aircraft to observe the status of the fire situation in the forests is becoming an exceptionally expensive measure requiring large material expenditure.

Aircraft are used to protect forests from fires on an area of 770 million hectares (out of the 1.18 billion hectares of our forest stock). On an area of about 400 million hectares there is no active struggle against forest fires at all. The result of fires in the northern regions is the disappearance of reindeer moss land, which contributes to mass migration and the reduction in the number of wild animals.

Radioactive pollution of forest land as a result of nuclear accidents and nuclear weapons tests has been detected over an area of over 3.5 million hectares. They include 1 million hectares in the Chernobyl zone, about 0.5 million hectares in the Ural region, over 10,000 hectares in Tomsk Oblast, and 2 million hectares in the zone affected by nuclear tests at the Semipalatinsk test range in Altay Kray. There are over 140 forestry establishments and 380 forestry sections operating on this territory. There are 83,800 forestry workers and members of their families living in 103 forest settlements.

The forest has the ability to firmly retain radionuclides, thus preventing their spread beyond the polluted territory. At the same time polluted forests are a source of secondary radioactive pollution of territories during forest fires when the radionuclides are transported over large distances.

The organization of the Russian federal forestry service on the basis of the former Russian Soviet Federated Socialist Republic Ministry of Forestry and the USSR State Committee for Forestry as the federal organ for the management of forests has diminished its status. The components of the Russian Federation have seen this as a weakening of state management of forestry, which in a number of regions has led to the violation of forest exploitation rules.

In the Russian Federation about 2.5 million small rivers which form resources and the water and hydrochemical regimes of medium and large rivers, in determining their specific ecological features, create unique natural landscapes, maintaining steady equilibrium or the redistribution of moisture in them.

With the growth of the economic potential there is an increase in the volume of nonreturnable use of water from small rivers which in Russia's central and southern regions reach 60 percent of their total water resources in a year of average rainfall and 90 percent in a dry year.

One of the main features of small rivers is the close connection between the formation of the flow [stok] and the basin topography. This has made rivers unusually vulnerable with the intensive development of the drainage system. An increase in the amount of plowed land, the delay in soil protection measures, and plowing right down to the water's edge have led to the development of erosion processes over large areas of the basins of small rivers and the silting up of watercourses, ponds, and water areas.

Because of the drastically increased human impact on small rivers they are degenerating intensively. The state of many rivers, especially in the European part of Russia, is catastrophic—their flow has declined by more than half, the quality of the water is unsatisfactory, many of them have disappeared completely.

In this connection the forestation of river valleys and flood plains and ravines is an important measure. In regions where basins have been extensively plowed up it is essential to pay special attention to the creation of water conservation and soil protection plantations on slopes, river valleys and flood plains, and areas close to streams.

As has already been noted at the start of this talk, at first glance the way the problem is being raised seems incorrect. According to the figures for state registration of the forest stock, over 15 years (1973-1988) land covered by forest in, for instance, Siberia, has increased by 18.4 million hectares and the total stock of timber by 1.5 billion cubic meters. Areas covered in mature and over-mature plantations have not declined, despite their intensive felling. The annual designated felling in these same Siberian forests has been assimilated by no more than 36 percent. The area of coniferous stock has not decreased.

Official statistics thus give no cause or alarm. It is not surprising that many specialists are concluding that it is possible to more than double timber procurements in Siberia. But the research by scientists at the Sukachev Institute (Krasnoyarsk) makes it impossible to agree with these assessments. The main conclusions of the research are as follows:

The forest recording data on whose basis the designated felling is determined are not always reliable.

Official calculations fail to consider the real potential of the forest stock, that is the ecological, economical, and technological accessibility of forests. This has frequently led to the depletion of forests on local territories, causing considerable economic damage and sometimes catastrophic consequences.

In the mountain forests of Siberia, on the basis of their increased economic importance, forestry must be conducted on the basis of the principles of a special nature use regime which will inevitably affect the size of the annual designated felling.

The ages for felling for the main tree species in Siberia—the pine and the larch—have been lowered, which artificially increases the areas of the stock in use and leads to its concealed overfelling.

The size of the designated felling for Siberia has been made at least twice as high as it should be.

The quantitative and qualitative assessment of timber resources in Siberian forests is very imperfect.

The system for organizing forestry and forest management in Siberia does not comply with modern conditions and needs to be reviewed.

Russia's forestry has always been financed on the residual principle, which has not made it possible to ensure the reproduction of high-quality forests. Right now the situation has only been aggravated.

Local industrial atmospheric pollution is causing the death of forests in regions where ferrous and nonmetallurgical enterprises are operating. The most graphic example is the operation of the Norilsk mining and metallurgical combine. Discharge of sulfur dioxide mixed with heavy metals is in excess of 2 million tonnes a year. The result is forests that have perished completely over an area of over 300,000 hectares and have been damaged over an area of 500,000 hectares, and the entire area on which atmospheric pollutants have had an impact has not been studied, because the East Siberian forestry organization enterprises lacks the funds to do the work. There is an extremely tense situation as a result of the discharges from the "Severonikel" and "Pechengonikel" combines on the Kola peninsula.

And so in the past four years the volume of timber procurements has almost halved—to 200 million cubic meters in 1993. It is expected that it will further decrease to 120-150 million cubic meters in 1994. The area of mature forests destroyed every year has declined by nearly 1 million hectares and preparation to develop new, remote tracts of land has virtually ceased. But here millions of people in the north of the European part, in Siberia, and the Far East who depend on the timber industry have found themselves in a desperate plight and are prepared to take any action to save themselves.

Both Russian and foreign representatives of the timber industry see a way out of the crisis in programs to restore the volumes of procurements through the intensification of the use of the remains of preserved forests in regions that have already been developed. The economic and social effectiveness of these programs is highly dubious and the adverse ecological effects of their implementation are obvious.

While a relatively small area of forest is directly destroyed (usually a few percent) industrial development causes the destruction of a number of components of forest ecosystems over incomparably larger areas. For instance, after geological prospecting work had been carried out the numbers of animals and birds which are

hunted are not restored for decades. Sable are moving tens of kilometers away from new railroad tracks.

We should also consider the great indirect impact—thanks to the increase in the frequency of fires connected with man's penetration into previously unpopulated forest tracts.

The role of industrial development in the destruction of the local population's social sphere is also great. For a number of minority peoples this simply ends in extinction.

Right now plans to mine minerals—primarily oil, gas, gold, copper, and diamonds—and also the creation of an infrastructure for this activity are the only sphere which is attracting substantial foreign investments.

Here the ignoring of the demands of nature conservation legislation, the lack of open discussion of action plans with the public, and sometimes overt criminal actions by the initiators of projects and by officials who support them are expressed even more graphically than in what are purely timber industry projects.

The strategy of action comes down once again mainly to increasing the volume of extraction of minerals from new deposits and not in finishing to work those which have already been developed and enhancing the efficiency of the use of raw material already available.

Moves Toward Solving Far East Radioactive Waste Problem

PM2906081194 Moscow IZVESTIYA in Russian
28 Jun 94 p 2

[Report by Natalya Ostrovskaya: "Barge Reprocesses Nuclear Waste"]

[Text] Vladivostok—The scandalously notorious liquid radioactive waste formed during the process of breaking up Pacific Fleet submarines will be reprocessed using a mobile floating complex of the barge type. This decision was made by the Russian-Japanese commission working in Vladivostok and Maritime Kray, which for 18 months has been closely involved in looking for ways to resolve the problems of the fleet's liquid radioactive waste.

IZVESTIYA has already reported (11 May 1994) that two options were examined at previous stages of the commission's work. Apart from the barge, the possibility of constructing a shore-based reprocessing complex was also entertained. But independent experts from the British consulting firm Crown Enterprises have calculated that the "floating" option is both cheaper and more practical. It is well known that a number of bases on the coast of Maritime Kray are associated with the so-called waste disposal ship division of the Pacific Fleet. It is these ships which the barge will "service."

Another reason why the floating complex was chosen to recycle liquid radioactive waste was the clear displeasure of the inhabitants of the city of Bolshoy Kamen, where

the main base for breaking up nuclear submarines is located—the "Zvezda" defense plant. This was the planned site of the shore-based complex. For the same reason of local discontent the tanker TNT-5 with hundreds of cubic meters of liquid radioactive waste on board was relocated at the end of May from Bolshoy Kamen to Pavlovskogo Bay, where it stands to this day.

The skill with which military men have been able to move around a ship that was written off long ago and is overloaded with a politically dangerous cargo is amazing. After all, back in spring Maritime Kray Administration announced there was a danger of the old tanker sinking spontaneously and liquid radioactive waste discharging accidentally into the bay.

Now however, after another stage of work by the Russian-Japanese commission, Yevgeniy Stomatyuk, chairman of the kray committee for natural resources, announced that this notorious liquid radioactive waste is a very insignificant part of the radiation danger that actually exists on the kray's territory at the present time. And in announcing this, he cited the existing ban on shipping solid radioactive waste out of Maritime Kray via the Trans-Siberian Railroad.

Nevertheless, despite all this, environmentally concerned Japan is still prepared to donate some of the money earmarked by its government for Russian disarmament to the plan for constructing a complex to process liquid radioactive waste. The commission calculates that three-four weeks will be spent finalizing the documentation and conditions of tender—an international auction-cum-investors' meeting which will specify a firm that is capable of implementing the plan to construct the floating complex at a realistically low price and taking into account all Russian and international environmental safety requirements.

Applications to participate in the tender have already been received from 20 firms and companies, mainly from Japan and the United States. Not one of these firms is Russian, unfortunately.

ARMENIA

Acting Environment Minister Named

NC0107071894 Yerevan Armenia's Radio First
Program Network in Armenian 1700 GMT 30 Jun 94

[Excerpts] An enlarged meeting of the Armenian Council of Ministers Presidium took place today under Prime Minister Grant Bagratyan. Fulfilling the agreement between the Armenian and Iranian Governments on border trade between Armenia's Megrinskiy Rayon and Iran's Marand Province, the meeting decided to designate the border trade area in Megrinskiy Rayon as a customs inspection zone. [passage omitted]

The meeting also discussed cadre problems. Aleksan Onniki Avetisyan was appointed head of the Athletics, Sports, and Youth Affairs Department of the Armenian Government.

It was decided to temporarily transfer the duties of Armenian minister of natural and environmental protection to Suren Hrandi Avetisyan, deputy minister for natural and environmental protection.

The Presidium also examined other issues.

AZERBAIJAN

'Mass' Destruction of Trees, Shrubs Attributed to Winter Fuel Shortages

944W'N0322A Baku BAKINSKIY RABOCHIY
in Russian 21 Jun 94 p 2

[Article by Ibragim Safarov, chairman of Azerbaijani Environmental Protection Society, corresponding member of the Azerbaijani Academy of Sciences: "Who Will Save the Green Friend"]

[Text] Do we love nature? Do we know how to protect it? These are not incidental questions for, as indicated by the practice of the past several years, wholesale destruction of a wealth of vegetation in the republic is going on right before the eyes of the local organs of power and the population. Green plantations created over many years in Baku and Absheron are being destroyed with impunity along with roadside plantings of trees throughout the territory of the republic. It is sufficient to say that, just in the area between Shamakhoy and the village of Maraza, 1,500 trees of the most valuable sort have been felled along the road. That was not interdicted either by the leadership of the Gobustan and Shamakhinsk rayons nor by the police agencies that maintain several stations there.

Over 25 percent of our forests are in regions controlled by Armenian occupiers. Beech, oak, sycamore, and other valuable types of trees are being felled in a predatory manner and exported to the neighboring republic. While in many regions, far from the front line, a great amount of lumber is utilized as firewood because of the lack of other kinds of fuel. Forests cultivated over the past 40-50 years were almost completely cleared in the former steppe regions.

What are the reasons?

Last winter the republic experienced an acute shortage of natural gas. Therefore, with the advent of cold weather, large-scale cutting of forests and green plantations started for use as fuel. Here is one example: despite the shortage of gas at Guandzhinskiy, with only 30 percent of its total requirements satisfied, the fuel that was received went not for heating the apartments but was mainly piped to vegetable hothouses. That is why the residents went out to cut trees for firewood along the streets as well as in the city suburbs. Many even cut down fruit trees on their own plots.

Not a single nut tree remained on the lane along the road between Gyandzha and Khanlar. Many eldar pines and sycamores were also destroyed, which, by the way, are listed in the Red Book.

The State Committee for Fuel must undoubtedly already start showing some concern to reserve gas for the appropriate regions, while, in the regions with no gas, it is necessary to stock additional types of fuel for heating, such as, for instance, cotton and tobacco crop residues, and dried parts of harvested vines. One would like to believe that the republic Cabinet of Ministers will focus on this vitally important problem without delay.

The protection of green plantations in Baku and at Absheron is highly inadequate. As of 1 January of this year, more than 80,000 trees and shrubs were cleared illegally. Private garages, motor vehicle parking lots, stores, and other facilities appeared to replace them.

At the present time, an unusual order exists for the felling of green plantations in Baku. Interested individuals apply to the city executive organ, which issues an instruction to the leadership of the Association of Green Enterprises to check the section in the application for presence of plantations. A two-man commission determines the number of trees to be felled. All decisions are affirmed by the chief agronomist of the Association of Green Enterprises.

In our opinion, the preparation of decisions must include participation of representatives of those regions on the territory of which the areas with plantations to be cleared are located. The final decision, in our opinion, is up to the city authorities.

At one time, Soyuzgiproleskhov [All-Union State Forestry Institute] allocated an area of 39,300 hectares for planting with trees and creation of forest-parks. For the most part, it is in the Absheron Rayon. Its leadership has objected to the utilization of that land for its designated purpose for many years. In our view, the republic Cabinet of Ministers must take necessary steps in order to eliminate such diarchy in Absheron. It appears that the most promising variant is to transfer the Absheron Rayon to the city of Baku.

Many industrial enterprises, factories, and plants that pollute the atmosphere do not concern themselves with questions concerning the planting of trees and gardens on their territory. But, fortunately there are some positive examples. For instance, workers at the Bakkonditioner Plant planted and raised 50,000 trees during 1978-1987 on their territory, while workers at the Bakmil Plant planted 3,000 trees and shrubs in the first quarter of this year alone.

It is no secret that one of the reasons today for a sharp decline in the rates at which trees and gardens are planted is the lack of necessary financing. For example,

the Administration of Green Enterprises of the Baku City Executive Committee is incapable of even paying its workers on time. Therefore, ideally it appears that state organs and major businessmen should sponsor the planting of trees and gardens in Baku and on the Absheron Peninsula. It would be appropriate to recall that the practice of planting trees and gardens in Baku was initiated by the well-known oil industrialist, Nobel. Taking into account the difficult soil conditions of the Black City, he brought in soil for planting from the Lyankaransk zone.

Last year, the republic State Committee on Ecology authorized appropriate financial aid for restoration of green plantations reduced to zero. One tends to believe that other organizations will be following that example.

In conclusion, I would like to note once more that ecological conditions in Baku and on Absheron Peninsula are steadily deteriorating. A significant decrease in the area under green plantations, destruction of a vast number of trees in the Primorskiy Park connected with the sharp rise in the level of the Caspian Sea, as well as the sharp rise in the number of motor vehicles and parking lots—all of that is in plain view of everyone. It has reached the point where all sidewalks in the center of town are being used for parking and are no longer safe for pedestrians. In Primorskiy Park, where thousands vacation, including the elderly and children, now has vehicular traffic. At the very center of Baku, on the Square of Fountains, right next to a large flower garden, there is now a huge motor vehicle parking lot, which is poisoning the air.

Baku, Absheron, Azerbaijan—that is our home. Both we and our descendants will have to live here. Ecologic purity there means our health and the health of our children. Therefore, let us all stand firmly for such purity.

BELARUS

Report of Refugees Settling in Contaminated Areas Refuted

WS3006094.394 Minsk BELAPAN in Belarusian
1900 GMT 29 Jun 94

[Text] The report circulated by ITAR-TASS claiming that "refugees have settled in radioactive villages" in Gomel Oblast has proved to have been "cooked-up."

A BELAPAN correspondent has learned this from Alyaksandr Syamyonaw, chairman of the Gomel Department of the Belarusian Migration Service. No one in Belarus has received the status of "refugee," though, indeed, some people from "hot spots" in the CIS are eager to come to Gomel Oblast. For example, 2,229 people came to the oblast last year from abroad. They settled in 22 rayons and towns of the oblast. There was not a single case registered certifying to the fact that people settled in any villages which were

abandoned due to high levels of radioactive contamination. Gomel Oblast has so far welcomed 350 immigrants this year. These immigrants come, primarily, from Kazakhstan (over 60 people), Tajikistan, Uzbekistan, and Georgia. The outflow of people is triggered by interethnic conflicts and economic instability in the post-Soviet republics.

Russia To Give 2 Billion Rubles To Clear Up Chernobyl

LD0307161594 Moscow Mayak Radio Network
in Russian 1300 GMT 3 Jul 94

[Text] Viktor Chernomyrdin and Vyachaslaw Kebich, the prime ministers of Russia and Belarus, are to sign an agreement today in Minsk on measures to clear up the aftermath of the Chernobyl disaster, and a protocol on the implementation of the agreement on merging the two countries' monetary systems. The agreement on Chernobyl envisages Russia giving Belarus (?around) 2 billion rubles. The second document on merging the two countries' monetary systems proposes that the mechanisms for merging them be worked out and that...[passage indistinct].

KAZAKHSTAN

Dutch Experts View Caspian Sea Problems

LD2706162894 Almaty Kazakh Radio Network
in Kazakh 1400 GMT 27 Jun 94

[Excerpts] The republican Water Resources Committee received a group of Dutch specialists today. Our correspondent interviewed Serik Smaylov, deputy head of the water problems department of the committee, on the aims of the meeting.

[Begin Smaylov recording] This group came from Holland to Kazakhstan at the invitation of our committee and the Ministry of Transport. They have been here for about 10 days, including two days they spent in Almaty and about eight in Atyrau. They saw with their own eyes the problems of the Caspian Sea and the living conditions of the local population. They monitored the rise in the Caspian Sea water level and discussed ways of protecting the population. During the visit they shared their valuable opinions and observations with us. [passage omitted]

We listened to our guests and our committee asked them to help us with a technical and economic program for protection of the Caspian Sea zone. This is a very important program. We have to move a lot of people in that area. [passage indistinct]

Conference Proposes Caspian Coastal Protection Program

*PM2906134794 Moscow SELSKAYA ZHIZN
in Russian 28 Jun 94 p 5*

["Fact and Comment" feature comprising report by Vladimir Yelufimov followed by "Editorial Comment" by SELSKAYA ZHIZN science observer Leonid Kruglov: "Caspian Encroaching"]

[Text] Alma-Ata [Almaty]—Coastal inhabitants' last hopes that the Caspian sea would halt its onward march have been smashed by Kazakhstan scientists at a seminar-conference in the city of Atyrau.

Having conducted a detailed government-ordered analysis of the situation which has developed over the last five centuries, the scientists reached the no-consolation conclusion that the water level will also continue to rise at the beginning of the 21st century.

If the current rate that the sea is filling continues, the water level will rise three-four meters in this time. This is in addition to the two meters by which the water level has already risen since 1977. This poses a flood threat to millions of hectares of coastal land where there are settlements, oil wells, industrial enterprises, roads, pipelines, power lines, and agricultural land.

The encroaching Caspian has already inundated fine pasture and meadowland, left a number of oil wells under water, and paralyzed some enterprises. Waves are now beating at the walls of the nuclear reactor at Aktau. Sweeping all before them, two-meter waves regularly break over the desert.

Having convinced the Atyrau conference participants that they should expect no kindness from the Caspian, the scientists expedited the adoption of a program to protect the coastline from the elements. More than 1,200 kilometers of dikes with reinforced walls are to be built in the two western oblasts of Kazakhstan.

To reduce the flow of river water into the Caspian the question was raised of resuming the construction of the Ural-Volga Canal and, if necessary, filling the major depressions in the Caspian area.

The idea of diverting Caspian water into the Aral Sea, which is drying up, did not win support because of the high cost of the project and its ecological unpredictability.

Editorial Comment: Any ecological projects require comprehensive research. The Caspian Sea today is an

international body of water. Russia, Kazakhstan, Turkmenistan, Azerbaijan, and Iran are sovereign states with outlets to the Caspian. The problem of the rise in sea level must become the subject of intergovernmental discussion, in which scientific forces from these states should participate.

You really begin to believe that nature is literally taking her revenge on man for abusing her. The damming of the Kara-Bogaz-Gol Strait in 1980 sharply changed the ecological situation in the region. The obstruction has now been removed. But old man Caspian, as if offended, has started to march forward, flooding inhabited coasts.

Experts of the UN Environment Program should participate in preparing an international agreement on the utilization of the natural resources of the Caspian. The Caspian is a highly complex eco-system. Any interference in its precise natural mechanism can lead to detrimental consequences for an enormous region of the world inhabited by tens of millions of people. An international agreement on the Caspian should form the basis for all types of utilization of the sea's resources, be it fishing or oil extraction, shipbuilding, or the construction of hydroengineering installations and other facilities.

Scientists from countries with outlets to the Caspian should pool their efforts and find an option for averting the consequences of the Caspian's assault on the land which is acceptable to all and not detrimental to other states' interests.

UKRAINE**More Plants Needed To Bury Nuclear Waste**

*LD0207162394 Moscow INTERFAX in English
1445 GMT 2 Jul 94*

[Text] Director Anatoliy Drugovyn of the Kharkov inter-regional plant for the burial of nuclear waste told Interfax-Ukraine that Ukraine needed more plant to bury nuclear waste.

According to Drugovyn, four of Ukraine's six nuclear dumps had actually exhausted their potential. As a result, the Kharkov plant was facing the main challenge.

The plant served facilities of several provinces in eastern Ukraine. As of January 1, 1226 cu m of hard and 305 cu m of liquid nuclear waste were buried there.

If it kept functioning as it did, the Kharkov plant would be used another ten years but Drugovyn saw the need for the creation of a supra-budget fund on which Ukraine would draw to bury its nuclear waste.

FRANCE

Inventory of Military Nuclear Waste Sites Published

BR2906114794 Paris LE MONDE in French
23 Jun 94 p 11

["J.-P.D."-signed report: "Military Radioactive Waste Sites Officially Listed"]

[Text] The National Agency for the Management of Radioactive Waste (ANDRA) has just published the 1994 edition of its radioactive waste "inventory." Defense-related installations (17 in all) appear for the first time in this document, which comprises 159 files stipulating the nature, volume, the level of radioactivity of the waste, and the identity of the company responsible for the site. (Footnote 1) (The "National Inventory of Radioactive Waste" can be obtained free of charge from ANDRA, National Observatory, P.O. Box 38, 92266 Fontenay-aux-Roses.)

The first edition of the inventory, published in 1993, listed the existing data on French radioactive waste sites. The publication of the second, updated and expanded edition of this document clearly indicates the role which the authors of the law of 30 December 1991 on the management of radioactive waste wished to give it.

Naturally, the list is not complete (footnote 2) (the new inventory includes 159 entries, i.e., 46 new ones with regard to the previous edition). "However, if we want to achieve a complete list one day, then it is essential that it be published annually," said ANDRA Director General Yves Kaluzny. "This is a very strong incentive for waste storers to voluntarily report themselves. If they were forced by circumstances to admit later that they are storing waste, then the impact will be worse."

Undoubtedly convinced by these arguments, the military agreed to have their waste sites included this year along with the civilian sites—a total of 17 sites (footnote 3) (Cestas, Cherbourg-Arsenal, Crozon-Ile-Longue, Valduc, Bourges, Pontfaverger-Moronvilliers, Bryeres-le-Chatel, Arcueil-Fort-de-Montrouge, Saclay-INBS, Limeil, Marcoule, Cadarache, Toulon (two), Grenoble, Saint-Priest, and Pierrelatte), including nine CEA [Atomic Energy Commission] or COGEMA [General Nuclear Materials Company] centers working on nuclear arms or on the cores of nuclear submarine boiler rooms, and Defense Ministry sites where various radioactive materials are stored (luminescent products, depleted uranium, etc.). "Our files on military sites do not reveal any confidential information, such as the exact composition of the waste," Mr. Kaluzny acknowledged, "but we do have access to a more complete inventory provided by the Defense Ministry and the CEA."

More Than 2,000 Sources

However, the main reason ANDRA's director general is satisfied is because this year he was able to include extra

data on radioactive sources used in industry and hospitals. Indeed, more than 2,000 such sources are put into circulation every year and their extremely widespread distribution makes it more difficult to monitor them than is the case with the waste from the nuclear industry. The first edition of the inventory only mentioned the French manufacturer, ORIS, a subsidiary of CEA. This year, the inventory includes 66 distributors which store used sources while they wait to be returned to the manufacturer.

It took three engineers 14 months to put this document together. Starting with lists provided by the regions, departments, and the many environmental protection associations, they carried out a supplementary survey among waste holders (EDF [French Electricity Company], CEA, and COGEMA), as well as among small producers, suppliers, or operators who use various radioactive materials.

The report does not make any comments or pass any judgments. The authors say in the preamble that ANDRA "is not a substitute for the national supervisory authorities in security matters, protecting the health of the population or enforcing respect for the environment." The aim of the inventory is simply to "collect, clarify, and distribute information."

That is a lot in itself, and the first edition has already led to action. In fact, EDF, TDF [Telebroadcasting of France], and France Telecom have decided to list their lightning rods that have radioactive tips (the manufacture of which has been banned since 1986). The clean-up of certain "black spots" has begun. However, such actions are not always justified. "The presence of radioactive waste on a site is not necessarily synonymous with danger," the reporters stress. Everything depends on how this waste is managed and monitored.

GERMANY

Seal of Quality Proposed for Waste Disposal Firms

94WN0305F Duesseldorf VDI NACHRICHTEN
in German No 21, 27 May 94 p 24

[Article by Christa Friedl: "Waste Disposal With a Quality Seal"]

[Text] Duesseldorf—What is natural for products and facilities will in the future also apply to waste disposal. A quality seal will visibly separate good offers from bad, meaning serious waste disposal firms from not serious ones. The objective of this action: The industry's black sheep will be easier to recognize.

German garbage, which ends up abroad in mysterious ways, is repeatedly the cause of pandemonium. One the one hand in the recipient country, because there it often represents a major environmental hazard due to the lack of disposal facilities, and on the other hand in Germany,

because returning the waste costs the taxpayers millions, and the guilty ones usually cannot be caught. "The chain from creating the waste to waste reprocessing has weak links," as Frank-Rainer Billigmann, general manager of the Federal Association of the German Disposal Industry (BDE) put it at the Entsorga trade fair last week in Cologne.

Profiteers, who deliberately do not dispose of the waste according to regulations, not only bring environmental protectionists and the police into the picture, but now the industry as well. "The general population has the image of us as having made the jump from non-person to profiteer in obscure ways," complained BDE president Hellmut Trienekens.

The association has therefore taken up the struggle against the black sheep. In the future, a type of quality seal will mark those enterprises which dispose of or reprocess the waste according to the letter of the law. A certified firm—judged by inspection—has qualified workers, modern equipment and tools, sufficient liability insurance and, above all, an environmentally conscious management.

Helping the BDE to do this is a judgement by the Federal Supreme Court at the beginning of March this year. According to it, a firm, a municipality or even a private person, who signs a contract with a waste disposal firm, must make sure that the waste company is capable and authorized to do it. Otherwise, the customer is acting negligently. Thus, if illegal disposal practices by a non-certified company become known, the customer can also be made liable.

To be sure, the process of certification which the BDE presented at Entsorga is long and not all that simple. The core is the generation of a so-called quality management handbook, which contains methods and working instructions specific to the firm, and also clarifies who is responsible for what in the company and how, in case of problems, the communication with the authorities must be handled. "The handbook is set up in accordance with DIN ISO 9001 and describes the norms relating to a medium-sized waste disposal enterprise," explains Klemens Grosse-Vehne, deputy chairman of the board of Dekra, which has produced a sample handbook at the request of the BDE.

Generating such a handbook with the aid of an external expert is the first step. After that, the company makes an application at a certification office. This office sends an auditor to the firm who, among other things, examines the quality of the waste disposal service. With the help of his final report the certificate is issued in complete form, only for certain areas or refused. Once a year a follow-up inspection is done, and every three years a more intensive audit. For the coordination of all these steps, as a coordinating place for certification-ready waste disposal firms and as a certifying institution, the BDE will in the next few weeks found the Certification Office of the

Recycling and Waste Disposal Industry for Quality Management Systems, reg. assn—abbreviated ZER-QMS—in Cologne.

But quality in the waste disposal industry is costly. On the one hand, for the disposal firm: Certification costs a medium-sized enterprise, according to the calculations of BDE and Dekra, between 50,000 and 75,000 German marks. To that are added the costs for the regular inspections after the initial certification. On the other hand, for the customer: "Disposal is expensive, because it must always meet more demanding environmental standards," concluded BDE president Trienekens.

According to the BDE, a certificate has three important advantages for the disposal company owner. He shows a visible delimitation from the illegal garbage disposal firms. He can demand correspondingly high disposal prices for his services. And, above all, he can save money, since the auditing detects weak spots in the enterprise.

The fact that the time and cost-intensive certification is worth it is shown by the example of the Hilti group in Liechtenstein. Between 1988 and 1993 all the company divisions were tested and certified. The result: "Our market shares have further expanded, and business profits continued to improve despite the worldwide recession," according to Hilti administrative board member Georg Rosenbauer at Entsorga.

Microorganisms Engineered To Consume Toxic Substances

94WN0305E Duesseldorf VDI NACHRICHTEN
in German No 21, 27 May 94 p 24

[Article by Christa Friedl: "Tailor-Made Poison-Eaters"]

[Text] Duesseldorf—Microorganisms are capable of breaking down numerous dangerous toxins in the ground, water and air. A new method for "controlled evolution" can increase their hunger for poisons and thus accelerate and optimize the breakdown.

Microbiological purification methods are considered nonpolluting, low in emissions and cheap. But on closer inspection, biological methods also have their difficulties: Thus, they can only be used for certain pollutants, and they are also sensitive to temperature and humidity fluctuations, slow and difficult to control. And, finally, biology quickly arrives at its limits of breakdown, so that content of residual material is often too high. In practice, biological methods are therefore frequently combined with chemical or physical methods in order to achieve the cleanup goal.

At the same time experts agree that microbiology harbors a major potential which is still unexploited today. Professor Peter Bartholmes, managing director of the Society for Biotechnical Optimization (bitop) in Witten, has discovered a key to this potential. He and his colleagues developed a method for "natural specialization of microorganisms through controlled evolution."

This harbors the simple idea that microorganisms break down more efficiently the better they get used to their toxic food at the beginning. In addition, nature—often through UV rays triggered by the sun—through mutation creates strains which are particularly well able to deal with a certain pollutant. These strains must be generated and specialized.

This takes place in the bitop reactor, which Bartholmes presented for the first time at the Entsorga trade fair. The facility consists of two fermenters, which are coupled to each other through a dialysis module. In one of the fermenters a mixture of organisms, for example consisting of the soil that has to be cleaned up, is being multiplied in a nutrient solution. During this process the organisms are being irradiated with a UV lamp, which triggers a multitude of random mutations.

The culture is passed through the hollow fiber module into the second fermenter. Its solution has had a defined quantity of pollutant added to it. Here, the "correctly" mutant organisms, which are able to break down the pollutant, are now separated from the "falsely" mutated ones. This process is repeated frequently until the breakdown rate in the second fermenter stagnates, and the biological system is thus finished being activated. If the soil contains several pollutants, the specialization of the organisms is carried out for each substance. The customer finally obtains "a thimble full of optimized pollutant culture," according to Bartholmes, which he himself can then multiply and use. In order to make sure the culture really works when applied, practical test runs with sludge, soil and sand are planned.

"We do not practice genetic engineering," Bartholmes explains. He avoids that controversial discipline for two reasons. On the one hand, genetic engineering, in his opinion, does not advance biological cleanup, since with genetically altered organisms the mutation frequently is not stable enough to "survive" the often lengthy cleanup methods. On the other hand, his method is the acceleration of a natural process—namely mutation through UV radiation—and therefore differs fundamentally from the specific genetically engineered intervention into the genetic makeup of the organisms. "For that reason we anticipate no problems with the law on genetics or with opponents of genetic engineering."

Fuel Cells Prove Their Value in Commercial Applications

94WN0305D Duesseldorf VDI NACHRICHTEN
in German No 21, 27 May 94 p 23

[Article by Manfred Grotelueschen: "Fuel Cells Have Proved Themselves in Tests"]

[Text] Duesseldorf—After a year of testing at the Thyssengas factory site in Duisburg, a fuel cell is now feeding power into the grid of the Dueren city works and taking care of heating a swimming pool. Essen Ruhrgas has also acquired positive experiences with the new, low-polluting technology.

To Ernst Ulrich von Weizsaecker, president of the Wuppertal Institute, it is clear: "The fuel cell is a fascinating development." Natural gas for the hydrogen-rich fuel cell gas is optimal from technical, financial and ecological aspects. This was what the scientist stated on the occasion of demonstrating the Thyssengas fuel cell at the Dueren city works. Weizsaecker expects further progress in this technology. In the future, improvement in energy productivity must be foremost, he demanded. Saving energy and protecting nature are given high priority.

Environmentally safe handling of energy is something the technical manager of the Dueren city works, Eckehard Friedrich, also believes is a duty. New technologies have been tested in Dueren, for example with absorption heat pumps, gas expansion machines, block-heating power plants and the combustion technologies for supplying local heat.

Thyssengas is operating the fuel cell in order to help this environmentally safe technology to become mature for the market, said the managing director of Thyssengas, Dr. Hans-Uwe Neuenhahn. He sees application possibilities for administrative buildings, schools, commercial enterprises, swimming pools, hospitals or larger housing units. Natural gas is the fossil energy carrier with the lowest emissions of pollutants; such fuel cells would therefore have particularly low emission values.

Fuel cells produce power and heat in an electrochemical manner—that is to say without flame—from natural gas and atmospheric oxygen. From 100 m³ of natural gas it is thus possible, using an electrical efficiency of approximately 40 percent, to produce more than 400 kWh of power and up to 440 kWh of heat. The fuel cells are particularly suitable as block-heating power plants for supplying power and heat.

In the meantime, the fuel cell has met the high expectations on it for more than 11,000 operating hours, according to experts at Thyssengas. Experience from the one-year test operation at Thyssengas from October 1992 to November 1993 during more than 8,000 hours of operation shows extremely low pollutant emissions and a high degree of electrical output, in particular during partial load. During the 3,000 hours of field test operation for the Dueren city works, planned for three years, the following was confirmed: The fuel cell even achieved an overall efficiency of up to 88 percent.

Ruhrgas AG, Essen, recently concluded the testing of a phosphoric acid fuel cell at a development center in Dorsten/Westphalia and transferred the cell for additional tests to the Bochum city works. Previous experience had confirmed the high expectations with respect to the favorable efficiency and low pollutant emissions, it is said at Ruhrgas.

In September 1992 Ruhrgas started test operation with the 200 kWh phosphoric acid fuel cell from the U.S. manufacturer ONSI. The cell now stands on the grounds the Bochum city works, in the Bochum-Hamme industrial yard, for additional practical tests. The power

produced here is fed into the low-voltage grid of the city works, and the plant buildings are warmed with the heat and hot water prepared for the showers. The Bochum test operation will range over several years and will be funded within the framework of the European Union's Joule II program.

Pollutants such as nitrogen oxides and carbon monoxide occur only in negligible amounts with the phosphoric acid fuel cell, as the first test phase showed. The nitrogen oxide emissions are particularly low due to the low process temperature. Further, in comparison with conventional gas-operated block heating power plants, 10 percent less carbon dioxide is released per kilowatt hour, as shown by measurements. Measurable emissions of noise are only caused by the auxiliary units such as pumps, ventilators and the coolant module.

Based on these results, Ruhrgas, together with additional partners, is working out a study on fuel cell plants with outputs between 3 MW and 5 MW, in order to support marketing in Germany.

Recycling of Electronic Hardware Takes Hold Slowly

94WN0305C Duesseldorf VDI NACHRICHTEN
in German No 21, 27 May 94 p 18

[Article by Christian Zupanc: "Electronic Scrap From Offices"]

[Excerpt] Aachen—Millions of PCs, telephones, fax machines and copiers are sitting in German offices, and each day there are more and more. Product cycles of less than six months and ever-dropping prices are the reason some older models find their way to the dump or the waste incinerator. Concepts by some electronic data processing manufacturers to recycle the individual components are only slowly taking hold.

At the beginning of 1995 the electronics scrap ordinance will take effect for old electronic equipment from offices. "With this ordinance we are imposing an obligation on producers and operators," says Cay Friemuth, press spokesman for the Federal Environment Ministry. "They must take back and reprocess old equipment after its period of use." Valuable materials must be reused and problem substances be removed from the environmental cycles. With increasingly scarcer dumping space and the associated, continuously climbing, disposal costs, recycling is a sensible alternative in the field of electronics as well.

But what sounds simple is in fact quite complicated. The electronic parts of our office equipment are divided into more the 50 groups of materials. Since the parts are quite small, of course, separation can almost only be done by hand. This is time-consuming and cost-intensive.

One exception is the annual accumulation of 5 million picture tubes from PCs and television sets. Here, semi-automatic methods are used for the disassembly.

Another problem is: Semiconductors coated with flame-retardant materials, impure synthetics and screen coatings can often be deposited in dumps only as special waste. The same applies to switches of highly toxic mercury and for imported condensers with PCB, which is prohibited in Germany, and is found primarily in old equipment. In addition, 500,000 tons of plastics a year are used in the electronics industry in Germany. In all, more than 15 different plastics are used, which are difficult to separate from each other and recycle.

In anticipation of the electronics scrap ordinance, several companies have sprung up which handle equipment recycling. The forerunner is the Association for Valuable Material Recycling (VfW) in Cologne, to which 430 companies belong. VfW has developed a four-step evaluation system, in which electronics scrap is collected, disassembled and in part reused—such as drive assemblies and power connection parts.

But: "A lot of it is still in its infancy. Not only must the return and disassembly be organized; we must also create a market for the new recycled products," according to waste disposal expert Nevermann of VfW. Deutsche Telekom has fewer problems of this kind: Their annual 6,000 tons of obsolete telephones, fax machines and answering machines are to be reprocessed by Electrorecycling GmbH in Goslar.

In recent weeks the enterprise, founded by Siemens, Preussag and Alcatel SEL at the beginning of this year, obtained legal approval as a cartel. Nearly 21,000 tons of electronic scrap will be reprocessed by the end of 1994 at the plant, which until now has been operated as a pilot project.

Telekom's goal is: "We want to set up closed cycles, in which all steps of the production all the way to reprocessing and reuse of the equipment are integrated," according to spokesman Stephan Althoff. The first success: In the Signo telephone more than 90 percent of the components are reusable. The actual successor model Signo 2 already consists of 100 percent recycled plastics, which are extracted in the electronics recycling facility.

Valuable materials recycling has also been partially realized at Canon, for example for toner cartridges, which are used in laser printers, copiers and laser fax machines. They are dismantled into individual parts by hand in Dalian in China near Beijing, and all plastic parts are melted down. New cartridges are then produced from the granulate thus obtained and from the metallic parts subject to quality testing. So far more than 2.5 million of them have been recycled at Dalian. At Glenrothes in Scotland Canon copying machines are "remastered," and old parts reused in new equipment. The only problem is the insufficient return of equipment so far. Metzendorf, who is responsible for environmental matters, believes the reason for that to be the selling of the product through dealers. "If we had direct sales, it would be simpler."

Another initiative from the producer is the Hewlett Packard (HP) concept: The U.S. company picked up obsolete office electronics of all brands from the customer and disassembled it centrally in Grenoble in France. At this time 400 tons of hardware a month are being converted there. Depending on the age of the equipment, 80 to 90 percent can be reprocessed. The rest goes to waste incinerators or into dumps. HP includes up to DM 2,50 per kilogram of computer in the calculation. The consumer is ultimately paying the costs, of course. Spokesman Friemuth at the Federal Environment Ministry suggests: "The reprocessing costs will be added to large equipment when disposed of, and for small equipment immediately at the purchase."

[passages omitted]

Increased Volume Forecast for Private Waste Disposal Firms

94WN0305B Duesseldorf VDI NACHRICHTEN
in German No 21, 27 May 94 p 2

[Article by Christa Friedl: "More Waste in Private Hands"]

[Text] Duesseldorf—While the steel and mechanical engineering industries, chemical and automobile industries are laboriously recovering from the recession of the past two years, one industry is rejoicing over double-digit growth rates: Waste disposal firms have never had so much waste to remove and to reprocess as this past year. According to estimates by the Federal Association of the German Disposal Industry (BDE) in Cologne, in 1993 there were about 44 million tons of residential waste, 23 million tons more than in 1990. The industry has long invested in high-tech: An increasingly greater part of the waste is being reprocessed or treated with expensive technology.

So it was no wonder that Entsorga 94, with more than 1,500 exhibitors one of the largest waste disposal trade fairs in the world, was opened last week not by the federal environment minister but by the federal economics minister. "The waste disposal industry now plays a significant role in the whole economy," stated Guenter Rexrodt on 18 May in Cologne. The figures are: In 1993 the German waste disposal firms achieved a profit of 75 billion German marks [DM]. For 1994 the BDE expects additional growth of approximately 10 percent. In the coming years the industry wants to create 10,000 new jobs. Above all, investments on the scale of DM 200 billion are planned by the year 2010.

The well-being of the waste disposal industry depends far more than in past years on environmental legislation. For example, the packaging ordinance has led to the development of collection and sorting technologies and the building of facilities and corresponding service systems.

At this time the industry is once again looking toward Bonn, where this week the arbitration committee is busy with the new law on a recycling system. The law, which

is to replace the presently valid law on waste, will have a major impact on the industry. It strengthens private waste disposal and forces the establishment of recovery systems for old products. In addition, it regulates the position of garbage incineration and extensively limits the dumping of waste.

It is still an open question whether the law will take effect in its present form. Last Friday the Federal Council rejected the draft. "There is a lack of clear instruments to reduce and avoid waste," North Rhine-Westphalian Environment Minister Klaus Matthiesen said at Entsorga about one of the numerous points of dispute between the Federal Government and the laender.

Of importance are two additional points of conflict, mentioned by Dr. Dietrich Ruchay, undersecretary at the Environment Ministry in Bonn, at the beginning of Entsorga. First: Can waste incineration under the term of "energy reprocessing" be equated with recycling of working material or raw material? Second, the battle is about definitions. "So far it has not been possible to adapt the German concept of residue, waste and secondary raw material to the European language regulation," according to Ruchay.

Now the arbitration committee wants to have a settlement as early as this week. However, the law is so inadequate professionally that a simplification was even excluded in the conciliation proceedings, as the Land Chamber placed on record at an early stage. Undersecretary Ruchay still said that he was convinced that the laender would ultimately vote for the law submitted by the Federal Government. The reason: Behind the scenes, approval of the law on a recycling system is connected with the establishment of an industrial return fund for waste illegally exported abroad.

Such a fund is provided for by the Basel Agreement, which regulates the worldwide export of waste. A fund fed and supported by the waste disposal industry would extensively relieve the laender of their financial burden. Says Ruchay: "But only if there is approval of the recycling system law will the Federal Government permit the industry fund."

Controlled Eddies Help Save Energy

94WN0305A Duesseldorf VDI NACHRICHTEN
in German No 21, 27 May 94 p 2

[Article by Silva von der Weiden: "Eddies Help Save Energy"]

[Text] Duesseldorf—In science turbulent flows are still considered unpredictable, and in technology they are undesirable because of their uncontrollable effects. However, special eddies can be specifically used in order to improve the efficiency of air heaters, evaporators, condensers or the cooling of gas turbine combustion chambers. In an interdisciplinary project, which is being financed with 1.2 million German marks annually for

the period up to 1966 by the German Research Association, scientists from Ruhr University Bochum are researching how it is possible to save energy and resources using controllable eddies.

"In heat exchanger systems we are looking for technical opportunities, which with the smallest use of material and minimal production and operating costs enables transmission of the greatest amount of energy," Martin Fiebig, professor for Heat and Materials Transmission and spokesman for the Bochum working group, explains the objective of the research. Special eddies are helping in this process. Anyone who wants to improve today's heat exchanger systems must know not only precisely where the energy transmission takes place, but also how it can be implemented as rationally as possible.

As an important interim result it already became clear that longitudinal vortices, which form parallel with the axis of the direction of flow clearly help improve the energy exchange between the fluid and the heat exchanger wall, because they utilize the contact opportunity with the wall surface particularly efficiently and are thus able to transport a great deal of heat with a minimum of friction loss. What is crucial is to ensure flow conditions at which preferably longitudinal eddies occur. But longitudinal vortices in flows are still combined with transverse vortices and those have to be suppressed. Transverse vortices increase flow resistance and therefore lead to undesirable energy losses.

In flow tests using an enlarged model of heat transmission surfaces the scientists experiment with variously formed longitudinal eddy producers, which are distinctly different from those which are being used today in evaporators, coolant or heat pumps or in air-cooled condensers of steam-powered plants. It turns out that delta-shaped eddy producers, in particular, are able to direct fluids or gases through pipes in such a way that preferably the longitudinal vortices, which are favorable for energy, form in the flow tunnel and take care of optimal heat transmission.

On the one hand, it is possible in this way to master higher temperatures in turbines and to improve their efficiency. On the other hand, the scientists are simultaneously pursuing a strategy of further minimizing the surface and the construction size of heat exchanger systems. This approach is lucrative for the construction and operation of many thermal engineering facilities, in particular dry cooling towers. "Here the costs can be reduced in proportion to the surface saved. Even relatively small improvements are therefore of major importance in saving costs," Fiebig stresses.

During the tests in the wind tunnel the Bochum researchers encountered another phenomenon, for which they have a practical application in mind: "We determined that even at very slow flow speeds non-stationary flows are created by eddies. This could be used to prevent heat exchanger fins from becoming coated with dust and dirt."

Using this effect could become interesting for the industry supplying the motor vehicle industry, since vehicle cooling systems are being made increasingly more compact by increasing the surface density of the fine gilled pipes. By so doing, the danger of pollution increases, however. In slow city traffic the air movement from the vehicle supplies only low air flow speeds, so that engine cooling usually has to be supplemented by a ventilator drawing on the battery. This is precisely where the scientists expect a noticeable improvement in heat transfer by using longitudinal eddy producers. But so far the industry has been hesitant to react to the discoveries of the eddy researchers. Professor Fiebig is firmly convinced, however, "that in the technology of energy methods one is only in the infancy of systematic utilization of eddies. Here, the potential for improvement of the process technology has not been exhausted by far."

Rexrodt Supports OECD-Wide Carbon Dioxide Tax

*AU0507153494 Berlin DIE WELT in German
5 Jul 94 p 13*

["H.H."-initialed report: "The FDP Wants To Combine Environment Protection With Market Economy"]

[Text] Bonn—The Free Democratic Party of Germany [FDP] wants to establish a closer link between environment protection and the market economy. That emerged at a party conference entitled "Ecological Market Economy" that was held in Bonn yesterday [4 July]. At the same time, the liberals are trying to draw a more distinct line between themselves and the other parties—especially the Greens and the Christian Democratic Union /Christian Social Union.

Economics Minister Guenter Rexrodt considers it one of the priorities of German European Union [EU] presidency to speed up the introduction of a carbon dioxide and energy tax in the European Union, "or preferably throughout the OECD." Speaking to journalists, he said it was, however, "an illusion" to expect that this tax would take effect during the next six months. The project should be continued under the French presidency in the first half of 1995, Rexrodt said.

A carbon dioxide tax should, however, not involve any additional net burdens for motorists. "Car owners have been punished enough," Rexrodt said.

Gerhart Rudolf Baum, environment spokesman of the FDP Bundestag group, called for an abolition of the motor vehicle tax and a shift towards an oil tax. "Not owning, but driving a car must be taxed. A plan for gradual increases must be worked out in the medium and long term. The equal relaxation of burdens on capital and labor, that is direct taxes, is an absolute precondition for that. Unlike the Social Democratic Party and the Greens, we do not want to fund any public expenditure programs by additional taxes levied for ecological reasons," Baum pointed out, adding that Finance Minister Theo Waigel has already presented a proposal for

shifting the motor vehicle tax. The existence of such a proposal has, however, not been confirmed by the Finance Ministry.

Electrical Appliances Recycled on Industrial Scale

94WN0302A Duesseldorf VDI NACHRICHTEN
in German No 20, 20 May 94 p 20

[Article by Si: "Industrial-Scale Recycling of Electrical Appliances"]

[Text] Selm—More than 2 million refrigeration units, 4 million televisions, more than 1 million pieces of used-up electrical equipment of all kinds—that is the annual flood of electrical and electronics scrap from German households, trade, business and industry. The Rethmann Group of Selm, Westphalia, recently took a decisive step in order to channel them in the direction of a recycling economy. At Entsorga 94 from 18 to 21 May in Cologne they present their newly opened reprocessing center as the most modern electrical recycling facility in Germany.

Each year more than 100,000 refrigerators, 150,000 television sets, 200,000 picture tubes and about 15,000 tons of other electrical and electronic equipment can have their pollutants removed, be separated into material categories and reprocessed at the new reprocessing center, officially taken into operation on 10 March in Selm. The result of this "reverse production," supported by the North Rhine-Westphalian land government, is more than 35 pure material categories, which return to the economic cycle as secondary raw materials.

In order to implement this concept, which is presented by Rethmann Kreislaufwirtschaft GmbH & Co KG, Selm, at their Entsorga exhibition booth in Hall 12 of the Cologne exhibition, the company has invested more than 12 million German marks [DM] in the three areas of "reverse production of electronic equipment," picture tube reprocessing and refrigerator reprocessing. In the medium term this creates about 100 jobs in Selm.

"We have adapted our electrical recycling activities to the demands of our customers from municipalities, trade, business and industry: Based on the draft of the ordinance on electronic scrap, we had to create recycling opportunities for the many electrical products which accumulate," as Thomas Engmann describes the initial situation. "Our reverse production concept," says the head of the electronic recycling division at Rethmann, "makes it possible to reuse all electrical equipment—regardless of how old it is, what type, which manufacturer or what the content is. For that we have developed a complex, multistep plant concept, which was coordinated with the extensive reprocessing potentials of the industrial group. At our Selm reverse production center we process computers, radios, television sets, copying machines, washing machines, refrigerators, in short all electrical/electronic equipment, in a process with several steps, that corresponds with the newest level of technology."

Manual or partially automated work is unavoidable in the first step of the reverse production center, electrical equipment reprocessing. In order to isolate pollutants and separate valuable materials into categories, the equipment is taken apart and divided into individual materials. Glass, plastic, wires, wood, picture tubes, semiconductors, motors, switches, aluminum and iron parts, metal/plastic compounds, batteries, capacitors and a multitude of other materials are gathered in special boxes. According to press spokesman Claus M. Andreas, the disassembly team removes the oil from radiators, "ventilates" the television picture tubes and "dries out refrigerators." Subsequently, coolants (such as CFC = chlorofluorocarbon) and compressor oil are removed, purified, compressed and passed on for appropriate use.

In the following steps at the reverse production center the "pre-cleaned" refrigerators are treated in a fully automatic, encapsulated reprocessing facility using four breakup machines. In this way ferrous metals, nonferrous metals and synthetics are mechanically separated out. The polyurethane insulating material in the refrigerators, which contains the greater part of the CFC R-11 which endangers the ozone layer, is finely ground and, according to the company's information, more than 99 percent of the CFC is removed by gasification. The pollutant-free polyurethane insulation is pressed into bricks and can be used without problem as insulating boards in construction.

The liquid CFC which is obtained is returned filled in casks to the manufacturer, where by means of "secondary recycling" it is broken down into its original materials of salt and hydrofluoric acid and thus rendered harmless.

The television and monitor picture tubes separated out in manual reverse production arrive, on an electronically controlled conveyor belt, in a picture tube reprocessing facility with many steps. In the first step the picture tubes, which have had their scanning components and wires removed, are comminuted in an evacuated crusher into a certain grain size. After magnetic separation of the ferrous metals, a washer cleans the glass fragments, whereby the fluorescent materials which contain heavy metals [remainder omitted in original].

The fluorescent materials bound in the water are filtered out, drained and concentrated as special waste. After the cleaning the water remains in the cycle, so that there is no waste water. In the third step of the picture tube reprocessing, the two principal glass segments of the picture tubes, the front window and the conical glass, are separated from each other by means of appropriate sorting methods. The picture tube glass, free of pollutants and crushed, which meets the strict RCL 1 and RCL 2 test criteria imposed on construction materials, is recycled in suitable procedures as secondary material.

"By a recycling economy we mean an ecologically as well as economically sensible system of multiple utilization of valuable materials. For this reason we offer concepts and

solutions from blanket-covering logistics, high-quality treatment and reprocessing technologies, to making secondary raw materials available." This is how Dr. Hermann Niehues, chairman of the board of Rethmann AG, defines the service spectrum of the group of companies which, as can be seen at Entsorga, includes above all waste water treatment.

Ecological Benefits Obtained From Improved Coolants in Industry

94WN0302B Duesseldorf VDI NACHRICHTEN
in German No 20, 20 May 94 p 21

[Article by Norbert Schmidt: "Dry Treatment Hotly Debated"]

[Text] Duesseldorf—Except for special cases, such as processing gray cast iron, this cast-iron expression was always valid until now: lubricant coolants raise the productivity and quality of the metal-cutting production. Nevertheless: At the Metav fair this May in Duesseldorf, dry processing created a stir. Because not only does it save the cost of waste disposal and protect the health of the workers, but, thanks to coated tools and more stable machines, dry processing is much faster, and thus more economical.

For Guenter Grossmann, technical leader of Mitsubishi Carbide MMC Hartmetall GmbH in Meerbusch near Duesseldorf, lubricant coolants are important not only to cool the tool and workpiece in machining: "We can assume that with nearly all tools it is possible to machine dry as well," he comments on the discussion about dry processing. "But often we need the emulsion as a help in transporting off the chips." For something that does not present any difficulty in surface processing, becomes a problem when processing the interior because of the necessary chip disposal.

With a processing depth greater than 3 x diameter, lubricant coolant is always required. But should a company now have two identical machines standing there, one for dry and one for wet processing? That is not possible, if only because the advantages of complete processing in one setup are lost.

For this reason Professor Walter Doepper, spokesman for the board of directors of Kennametal Hertel, Fuerth, advocates a new partnership between the tool supplier, machine producer and user. Doepper, as a representative of the tool industry, wants to be a part of solving the chip removal problems at an early stage: The tool professionals are to decide, after an examination on the spot, which operations can be saved through modern processing methods and optimal tools.

Doepper is thinking in particular of substituting for polishing. In addition to developing new hard metal (plus coatings), which have edge zones enriched with cobalt as some kind of "bumpers," new development of machines is necessary.

"For turning without emulsion we offer coated Cermet," explained Dr Joachim Fabry, who researches market development for Kennametal Hertel. The coating acts as an insulator and ensures that 80 percent of the heat is removed with the chips. Guenter Grossmann of Mitsubishi Carbide can also refer to activities which improve the chip removal in dry processing: The "QB-type" cutter is equipped with an integrated vacuum encapsulation that makes it possible to vacuum off the chips right from the cutting edge.

But this involves a bed milling machine, which can only be used for external processing. During drilling an air stream instead of the coolant could take care of removing the chips.

At Metav, Krupp Widia, Essen, offered an extensive program of disposable inserts made of the coated hard metal type TN 450 for milling in the ISO groups P 25-45 and M 20-40 for all common cutters. Toughness and high resistance to wear characterize this type, coated with titanium nitride and titanium carbonitride. The manufacturer regards the high manufacturing safety with a broad application range as being particularly advantageous, as well as milling under unfavorable working conditions—both dry and wet.

When drilling with the Coromant U drill, Sandvik, the future parent company of Widia, also continues to concentrate fully on emulsion: The sharply angled U drill cuts deep holes at high feed rates without tool deviation. This is accomplished through its special chip channel design, which enables maximum chip removal with the lubricant coolant. The fact that Sandvik here advocates less personnel-intensive production is due to the problem-free production, which again is achieved by flushing out the chips.

With their "Titex-Plus" drills for dry processing the drill specialists of Guenther & Co., Frankfurt—a company of the Sandvik group—concentrates entirely on its hard material layer Tinal made of titanium aluminum nitride. This layer functions as a separation material between tool and active material and is intended to replace the lubricant coolant, since it has a high degree of temperature resistance. The chips can obviously not get stuck and are easily transported out by the drill worm. The Frankfurters regard the costs of lubricant coolant, from purchasing to disposal, including the health risks for the machine operators, as the greatest argument for dry processing.

The potential disappearance of lubricant coolant has even given the strategists at Guehring the idea of creating "eco" tools, which are both economical and ecological. In numerous chip removal tests the developers from Albstadt tested the behavior of the tools in dry processing and arrived at completely positive results. Only when processing AlSi alloys was it impossible to implement coolant-free chip removal, either by changing the cutting parameters or through the geometry or lamination. Built-up edges and stopped-up grooves were always the result.

As a solution one developed "microjet lubrication," which serves less as a coolant than to prevent the chips and tool from sticking together. With the help of a two-phase nozzle, the tool is drenched with an easily evaporated liquid. By so doing the process does not remain dry, to be sure, but the chips do, which is an important factor for their disposal. But for the machine operator it is much more important that the lubricant does not change the air in his surroundings.

At Metav dry processing could be seen live at Fette, Schwarzenbek. The company concentrates on cutting material of power-metallurgically produced high-speed steel (PM-HSS), which is very tough and wear resistant. The good performance in dry processing is primarily achieved by means of the combination of basic material and the multilayer TiCN coating.

Wohlhaupter, Frickenhausen, known for the high quality of its surface swivel heads, had a machine just for that at the fair booth, a processing center from Heller. There, the new precision lathe series B-Balance was demonstrated at high speed. Precision lathe tools have automatic imbalance compensation, which is activated by the adjustable insert lever during shifting.

Komet, Besigheim, regards the universal locking diameter of its new KUB drill series as more important than dry processing. This saves tooling time, because with drill diameters of 14 to 54 mm the cylinder shafts are the same. And they can be used in processing centers as well as in lathes. In addition to spirals for optimal chip removal, a central coolant supply has been integrated.

Cleanup Begins on Polluted Tar Works

94WN0302C Duesseldorf VDI NACHRICHTEN
in German No 20, 20 May 94 p 25

[Article by Michael Peter: "Poking Around the Tar Lake"]

[Text] Duesseldorf—In Rositz in Thuringia there is a terrible stench. The former tar works has left behind a large lake of toxic residue from the tar production. Who will pay which part of the cost for cleaning up the lake and site was recently agreed on by the Trust Agency and the land of Thuringia. But it remains questionable whether the necessary technologies to remove the pollution even exist.

The sun is hardly visible when the Rositz residents begin wrinkling their noses. They anticipate this summer with mixed feelings. Stefan Dobmeier, mayor of the northeast Thuringian community, confirms: "As soon as it gets warm, you can smell the lake." On hot days the stench is hardly bearable.

The source of the evil has been known for decades. Since the 1930s the Rositz tar manufacturing plant has been dumping its production wastes, tar residue and acid resins into a disused brown coal mine. The fact that those responsible surely knew what they were doing is

revealed by the name of the tar lake: In a descriptive manner they christened it the "New Worry."

However, the 2-hectare-large and up to 20-meter-deep tar lake is only part of the unwelcome and expensive legacy of the 70 years of operation of the tar processing plant, which was closed in the year of the turnaround, 1990. Several plant dumps, as well as the 43-hectare works themselves must be cleaned up, before the site can be industrially used again. On that there is consensus. Concerning the financing, however, the Trust Agency and the Thuringian Environment Ministry have been fighting for more than a year.

Breuel's ministry, as the former owner of the plant, originally wanted to limit its financial cleanup involvement to 30 million German marks [DM]. At the urging of the Thuringians, in the summer of 1993 the Trust Agency and the land agreed to almost four times that amount. With that, Thuringian Environment Minister Hartmut Sieckmann had overcome an important hurdle, because it is only beyond the DM 100-million limit that pollution sites are classed as major projects, of which there are now 19 in the new laender. And for major projects the financing shifts more heavily toward the Trust Agency: instead of 60 percent it carries 75 percent of the cleanup costs.

On Monday of last week the arguments came to an end: The tar lakes were sold to the land for the symbolic price of DM 1. Thus, the Federal Government will pay 75 percent of the approximately DM 110 million cleanup costs, and the land 25 percent.

The tar processing plant is one of the most problematic old pollution sites. Experts from Hydrogeologie Nordhausen GmbH believe that the cleanup could cost as much as DM 300 million. The expertise of the Nordhausen people now serves as the basis for a cleanup framework concept and financing concept.

The first cleanup work has already begun at the plant site and the "New Worry." Buildings and facilities have already been partly demolished or disassembled. The oil layer which is floating on the ground water is being pumped off. A large-scale technical experiment is also being conducted in the tar lake. The uppermost, up to 1-meter-thick, sludge-like, oil layer is being turned into a thin liquid, pumped off and subsequently separated into oil and water. The cleanup work officially began last week with the dynamiting of two chimneys, after the Trust Agency and the land had come to an agreement.

The deeper lying layers of the "New Worry" are causing headaches for Matthias Wagner, who is the one at the Thuringian Environment Ministry handling the tar lakes. Because below the first layer lies a 4-meter-thick, liquid water-oil layer, and below that a 4 to 5-meter-thick layer with the consistency of shoe polish, and, finally, an 8 to 10-meter-thick solid layer. All in all, according to the information of the Thuringian Environment Ministry, 500 million m³ of tar residue and construction waste must be disposed of.

"It is not yet clear whether the 'New Worry' must be completely emptied out, or whether the lowest layer can remain in there. The general cleanup goal will not be negotiated until the next few weeks," Wagner explains. The way he puts it, questions of cleanup techniques are still open. "We do not know how we are to lift the lower, pasty, layer," he admits. Heating the mass or cooling it to the point where it can be removed by mining techniques is too energy- and thus cost-intensive.

On the other hand, a solution is emerging for recycling the residue. The tarry waste is being burned at the Mumsdorf power plant in a test run. "The material has twice as high a caloric value as the previously used brown coal," waste expert Wagner sums up the initial experience.

But all of this is just the first steps. "We will be dealing with the New Worry for 10 to 15 years," he estimates the timetable for cleaning up the tar lake. And the New Worry is not the only waste deposit for the tar processing plant. Above all, the soil at the plant site, which is polluted with phenols and polycyclic, aromatic hydrocarbons, must still be cleaned up. It has still not been determined how much soil must be cleaned and to what degree. Jena Umwelttechnik GmbH has calculated in an expert report: If the contaminated soil were to be loaded on railroad cars, the freight train would be more than 600 kilometers long.

Even if the Thuringians are still facing unsolved cleanup questions, the future of the Rositz site will be shown in a better light. Where originally heating oil and gasoline were extracted from brown coal low-temperature distillation tar for the imperial navy, and up to the closing of the plant 18 million tons of tar and 10 million tons of heating oil were processed, a gigantic waste disposal center is being planned. Facilities for plastic recycling, for special waste incineration and soil treatment are to turn the site into a center for innovative environmental technology. The site also offers sufficient room for a technology park, which Jena University is contemplating supporting.

Cogeneration Plant Will Improve Air Quality in Berlin

94WN0302D Duesseldorf VDI NACHRICHTEN
in German No 20, 20 May 94 p 26

[Article by Klaus Jopp: "Cogeneration Plant Improves Berlin's Air"]

[Text] Berlin—A cogeneration plant with modern technology is to replace an old facility in central Berlin. In addition to power and heat, one should soon also expect better air by the Spree.

Berlin will soon breathe easier: 80 percent less dust, 76 percent less sulfur dioxide, 48 percent less nitrogen oxides, according to the impressive comparison of specific emission per produced heat unit of the old and future thermal power plant of Berlin Mitte between

Koepenicker Strasse and the Spree. The still existing old plant (built in 1964 for 226 MW heat and 96 MW electric power) of Energieversorgung Berlin AG (Ebag), will be replaced by 1996 by a cogeneration plant of the most modern technology, with a thermal output of 340 MW and a total output of electric power of 380 MW.

When operated with natural gas, the emissions will not exceed 0.1 g per m³ for nitrogen oxide and carbon monoxide, and the value for sulfur dioxide is practically zero. When operated with extra light heating oil, which is also possible, the concentrations are only insignificantly higher. Thanks to the combination of gas and steam turbines, the carbon dioxide output also drops considerably, by nearly two-thirds, compared to the variant with separate power and heat production.

"At the Mitte an old plant is being replaced by a combined gas and steam turbine plant, which is appealing due to its environmental friendliness and its economy," stresses diplomat engineer Hartmut Jess, head of Berlin Kraft- und Licht-Aktiengesellschaft's (Bewag) project group on the Mitte Power Plant Cleanup, which since the merger with Ebag in July 1993 has again been responsible for the entire capital.

Once ABB Kraftwerke AG, Mannheim, had acquired an extensive planning contract in the spring of 1993 to work out the licensing foundations based on the Federal Emission Protection Law, in early May the letter of intent was converted into a firm order. Bewag's investment volume amounts to 550 million German marks [DM], more than half of which remains in Berlin and the adjoining laender.

In all, the power and heat suppliers of the capital will get the most powerful thermal power plant of this kind in Germany. "Here will be demonstrated how the valuable raw material of natural gas is optimally converted into the useful energies of power and heat. Thus, the preconditions are created for continuing to supply the city center of Berlin with environmentally friendly district heat," explains expert Jess.

On the one hand, the natural gas fuel is environmentally friendly per se because of its high hydrogen content and its low sulfur content; on the other hand, ABB's cogeneration concept is marked by a particularly high degree of conversion for the primary fuel used. Contributing to this are in part the gas turbines of type GT 13 E2: "Their efficiency of 36 percent in solo and up to 56 percent in combined operation is tops in the world in their size class," confirms Dr. Ulf Berg, head of the division for gas turbines and cogeneration plants at ABB in Mannheim. On the other hand, the power plant is designed for power-heat coupling, meaning that up to 300 MW thermal output is produced in order to supply the district heating net between the Central Railway Station and the Brandenburg Gate, between Spittelmarkt and the Television Tower.

With 165 MW, the GT 13 E2 is among the most powerful gas turbines in the world. But since Berlin-Mitte was primarily conceived as a thermal power plant (HKW) for producing district heat, the output of electric power is a byproduct. The steam turbine is therefore also not designed as a condensation machine, as is usual for exclusive power production, but as a back-pressure turbine with correspondingly greater exhaust steam pressure. For this reason it is not judged by the electrical efficiency (47.9 percent) but by the fuel utilization. The latter achieves a peak value of nearly 90 percent at HKW-Mitte.

"Decisive for the contract were the favorable emission values, extremely important precisely because of the location in the center of the capital, the short construction time and our worldwide experience in building cogeneration plants," summarizes Klaus Linnebach, chairman of the board of ABB Kraftwerke AG.

Another benefit for the environment: Thanks to capturing the heat in a closed cycle, only very little cooling water has to be taken from the Spree, and the only waste heat returned to the river is exclusively from side processes (generator cooling). At present 36,000 apartments, 245 public facilities and 160 customers in industry and business are connected to the Mitte district heating network. After the complete reorganization of Berlin-Mitte, it will be possible to supply an additional 23,000 housing units, among them also the new buildings at Potsdamer Platz. Since the power plant is being built in the middle of a residential area, special emphasis was placed on protection against noise: Despite the increase in output, the cogeneration block clearly works more quietly than the previous plant, and the residents are obviously thankful. There were no protests against the big project.

People Object To Planned Nuclear Waste Filling Station

AU2806155994 Frankfurt/Main FRANKFURTER
RUNDSCHAU in German 28 Jun 94 p 4

[Report by Dieter Balle: "Nuclear Filling Station Rejected"]

[Text] Karlsruhe, 27 June—The reliability of the operators and the security of the planned filling station for highly radioactive waste solutions (HAWA) to be established in the closed-down Karlsruhe reprocessing plant (WAK) are at the center of a public debate that started at Linkenheim near Karlsruhe on Sunday. The 40-million German mark [DM] filling installation is to pump 80,000 liters of highly poisonous reprocessing wastes containing plutonium and uranium into special containers that will then go to the Belgian nuclear center of Mol in 30 rail shipments for vitrifying. The nuclear waste is then to be stored in the Gorleben intermediary deposit. The total costs of the project will be approximately DM500 million.

A total of 19,000 people have officially objected to the project by WAK and the Karlsruhe nuclear research center (KFK). These objections are now being discussed at a one-week event chaired by the Baden-Wuerttemberg Economics Ministry. The opponents say the fact that a fuel element disappeared from the KFK a couple of years ago and several hundred workers were contaminated with plutonium over a period of 10 years makes them doubt the operators' credibility and reliability.

According to the KFK, 0.24 percent of the workers examined were found to be contaminated with plutonium. That makes 11 cases. The KFK says there is no reason for doubting the reliability of the operators.

Right at the beginning, an application for the suspension of the approval procedure, of which the debate is a part, was rejected. The claimant argued that the approval authority is prejudiced because the land of Baden-Wuerttemberg as the operator has a "financial interest" in the project. The critics of the installation also complained about the great risks an accident in the HAWA would involve. At a press conference organized by the anti-nuclear initiatives, it was also pointed out that the highly dangerous transport shall not be subject to the public approval procedure. The action committees demand that the procedure be suspended.

Regulation Proposed in Favor of Renewable Energy Sources

BR2806140194 Duesseldorf HANDELSBLATT
in German 24 May 94 p 4

[Text] The coalition parties intend to introduce a bill to promote renewable energy sources at today's meetings in Berlin, Kurt Faltthäuser, CDU/CSU [Christian Democratic Union/Christian Social Union] alliance energy spokesman and Bundestag floor leader, has told HANDELSBLATT. The bill embodied arrangements shelved when the "Energy Act" was passed, he said.

It centered on an arrangement whereby the electricity supply corporations would receive subsidies out of the power generation fund, Faltthäuser explained. What the Union and the FDP [Free Democratic Party] wanted to achieve was to exempt renewable energy sources from the "coal pfennig," but for various reasons this could not be done. It was therefore proposed that the electricity corporations should now be reimbursed with part of the "coal pfennig" levied on the consumer and diverted to the power generation fund. The higher the proportion of renewable energy sources used to generate the overall quantity of electricity supplied, the higher the refund would be, Faltthäuser explained. The Building Act should also be amended to provide particular support for renewable energy sources.

Faltthäuser stressed that renewable energy sources had already been receiving public funding for research, development, pilot projects, and market introduction since the seventies. The sum had already exceeded 3 billion German marks [DM] for Germany alone, and

DM3.5 billion taking cooperation with developing countries into account. Since 1982, the Federal Government had spent DM825 million on photovoltaics, DM196 million on wind power, and DM68 million on the exploitation of biomass to generate power. Furthermore, a "package of individual measures" had been brought in since 1991 to support the introduction of renewable energy sources onto the market, said Faltlhauser, citing the "250 Megawatt Wind" program, which had cost DM330 million, as an example.

Faltlhauser announced that the Redevelopment Credit Institution would be launching a new innovation funding program worth DM2 billion in 1994. The program would also be open to businesses that developed new products for renewable energy source exploitation. "Taken together, all this makes for quite considerable funding. We also await a detailed Federal Government report on renewable energy sources at the end of the year. If the report shows that yet more action is needed, we shall take the appropriate steps," said Faltlhauser.

In Faltlhauser's view, the Union alliance had a "cohesive concept of energy policy." After coal and lignite, followed by nuclear energy, renewable energy sources were the third major means of achieving the energy policy goals of security of supply, cost-efficiency, environment-compatibility, and resource conservation. "We must achieve these goals because, apart from anything else, a secure energy supply forms the basis for economic and ecological development in a modern industrial society," said Faltlhauser.

According to Faltlhauser, the coalition does not even need the blessing of the Bundesrat with its SPD [Social Democratic Party of Germany] majority, for the bill, as it is a dissent bill (Einspruchsgesetz), not a consent bill (Zustimmungsgesetz). All the same, Faltlhauser is counting on obtaining the consent of the social democrats, "because, after all, the SPD wants to promote renewable energy sources as well."

The union spokesman heavily criticized the social democrats' nuclear policy. The SPD, he claimed, was obstructing nuclear power "wherever it could," and "preventing obsolescent plants in eastern Europe from being brought up to German safety standards." Faltlhauser also accused the social democrats of "presumptuousness and political barnstorming" because they wanted to shut down a number of nuclear power stations within four years and place an immediate ban on reprocessing abroad. Nuclear power stations were plants that had a service life of up to 60 years, Faltlhauser believed. Demanding early shutdowns, except when absolutely necessary for safety reasons, would be a "squandering of national economic resources." It would also unleash a flood of claims for compensation.

Toepfer Insists Nuclear Waste Disposal 'National Task'

*AU2806135894 Hamburg DPA in German
1215 GMT 28 Jun 94*

[Text] Bonn (DPA)—Federal Environment Minister Klaus Toepfer rejected speculation on 28 June that German nuclear waste will possibly be disposed of in China. "Radioactive waste disposal remains a national task and must take place in Germany," he stressed. The minister added: "I do not intend to change my mind in this respect." Germany has the necessary technology to ship, treat, and dispose of little, medium, and highly radioactive waste, he said.

Toepfer stressed that everything should be done now to push the waste disposal projects of Gorleben and the Konrad mine. "The search for waste disposal sites abroad is no solution." With this statement, he rejected a report of WESTDEUTSCHE ALLGEMEINE ZEITUNG of 28 June, according to which Beijing is seeking close cooperation with Bonn in the area of intermediate or ultimate disposal of spent fuel elements from nuclear power plants. The report says that it is not ruled out that China will set up an international ultimate waste disposal site that could also store highly radioactive nuclear waste from German nuclear power plants. The report adds that during Chinese President Li Peng's visit to Bonn, scheduled to begin on 3 July, agreements will be signed on the participation of German firms in a disposal program in China.

The report also refers to a confidential paper from the power industry, which speaks of a cost advantage of 1 billion German marks if it were no longer necessary to reprocess nuclear waste by expensive procedures. Reprocessing takes place in the facilities at La Hague (France) and Sellafield (Britain). The remaining material will subsequently be stored in Gorleben.

Informed sources of the nuclear power sector confirmed that the agreements with Beijing are above all on German know-how for the treatment of nuclear waste, including the solidification method, or conditioning. The expenses mentioned in the report, that the German power industry can possibly save, are not news; relevant figures were published some time ago in connection with the discussion on the direct ultimate waste disposal—instead of reprocessing—of spent fuel rods. The sources also admitted that the electricity suppliers are also considering a more cost-advantageous removal of uranium from their nuclear reactors.

In the eighties there was already speculation that the Chinese would dispose of German nuclear waste in the Gobi desert against good payment. This caused former Federal Interior Minister Friedrich Zimmermann (Christian Social Union), who at that time was also responsible for reactor safety, repeatedly to resolutely deny such speculation.

ITALY

New Batteries, Photovoltaic Panels Developed

BR2806140394 Milan IL SOLE-24 ORE
in Italian 31 May 94 p 8

[Article by Giuseppe Caravita: "Phos Goes for the Super-Solar Cell"]

[Text] If everything goes well, it will be the first project to be launched by the Berlusconi government to create jobs. It is not a small project. The initiative could require 400 billion lire and create 5,500 new jobs. It is centered on the new energy technologies of Phos batteries. This small Milan-based company has perfected a new generation of lithium-polymer batteries and photovoltaic panels that are capable of starting a revolution in electrical transport and solar energy.

A detailed work plan is currently on the prime minister's table. It primarily contains a plan for the industrialization of the new technologies linked with a program for their marketing and distribution. A special interministerial committee (with representatives from industry, the environment, research, foreign trade, transport, employment, the CNR [National Research Council], Phos batteries itself, and Greenpeace in a consultancy role) will work on this double project. Gianfranco Borghini, who is responsible for the prime minister's employment task force, is to be chairman of the committee. "We are organizing the first meeting with the ministers to verify the feasibility of the project," confirmed Borghini. Federico Foti, the founder of Phos, anticipates that it will be at least a couple of weeks before the committee starts its discussions. Then the initiative could effectively be launched, and the first production modules for thin film batteries and solar cells could enter into service by the end of the year, building up to a production capacity of international importance by 1997.

The gamble can be summed up by a few key figures. The new thin film lithium-polymer batteries are six times better than normal lead accumulators in cost/performance terms, and three times better than nickel-cadmium batteries. The photovoltaic cell (in practice the identical technology using a calibrated thin film to capture light and transform it into electrical energy) presents, at least on paper, even more obvious advantages. It costs 50,000-75,000 lire per square meter compared with the 250,000-500,000 lire of the existing silicon cells, and has an energy efficiency of 25-30 percent compared with 12-18 percent. It can be easily installed, being a thin film that is less than half a millimeter thick, and looks like a sort of transparent cellophane.

This set of figures, examined by the CNR with direct tests on prototype accumulators, has evidently convinced those who are responsible in the prime minister's office that it would be a good industrial gamble. This follows an analysis started some months ago by the staff of [former Prime Minister] Carlo Azeglio Ciampi for the electric automobile

project, that the unions had proposed as a new activity for the Alfa Romeo factory at Arese.

Since then the Phos issue has not just remained on the agenda of the task force coordinated by Borghini. It has also been extended from being just the production of batteries to photovoltaic energy and into a rapid take-off industrial project that has recently been given the go-ahead to pass on to a more detailed feasibility study by senior government officials. This has led to the work plan that has been prepared by Phos, and that in 1997, could see the plant costing over 400 billion lire enter into operation, employing 5,500 people who would be able to produce a complete line of new products, ranging from batteries and cellular telephones to the provision of photovoltaic equipment for a complete ENEL [National Electric Power Company] power plant. In this latter case, according to Phos, the cost of a kilowatt-hour produced using the new technology would be five times less, decreasing from 825 lire to 160 lire. This figure is somewhat sensational and it is calculated on the hypothesis of a photovoltaic plant of the type that ENEL has put into function at Serre (Salerno). Once converted to thin film, it would manage to produce over the same surface area (28,000 square meters) about 7.25 gigawatt-hours per year, compared with the current 4.8 gigawatt-hours per year. The total cost for the cells would be 2.5 billion lire, compared with the current 39 billion lire for the silicon panels.

The second "leg" of the project, that of promotion and marketing, has equal importance in the work plan currently under study. The area of diffusion of solar energy is still extremely narrow, if not inexistent, both in Italy and abroad. Furthermore, it is the result of a market that is made up of small groups of experimenters and pioneers. The goal of Phos is to extend the area covered by the applications as rapidly as possible, and to create a circle of collaborators able to multiply the distribution potential of its prototypes. This is why Phos has started negotiations with Greenpeace to build a demonstration solar power plant, and for a dissemination plan, both inside and outside Italy's borders. The plan provides for the issue of low-cost cards bearing the holder's name that anybody interested in being involved in applications projects for the new technology can use to have access to information, programs, technical standards, and the possibility of agreements coordinated with the Phos project and the prime minister's office.

Foti explained that: "A basic technology like lithium-polymer batteries and cells needs a large number of developers who are able to set up additional projects and applications for the technology, so that it can get onto the market rapidly with complete solutions. This is where the idea of an access card came from. This allows for both reserved relationships and at the same time for the rapid extension of a web of alliances with the users of the cards." The card can be purchased or ordered, as from today, for the sum of 39,000 lire. Phos will send the purchaser a questionnaire asking the possible partner for the general technical characteristics (power required,

voltages, costs ...) of each planned application. "In this way," continues Foti, "we want to collectively define product standards that are as general as possible, with which we can start production rapidly and with a minimum of errors." Phos will then set up a database and a message service that can keep its developers informed of market opportunities for the new solar energy.

Environment Minister Outlines Priorities

BR2406070894 Milan *IL GIORNALE*
in Italian 23 Jun 94 p 6

[Interview with Italian Environment Minister Altero Matteoli by Federico Guiglia in Rome; date not given: "Matteoli: 'What Is This About a Black, I am a Real Green'"—first two paragraphs are *IL GIORNALE* introduction]

[Text] Rome—The only "fascist" thing that has remained is the balcony on Piazza Venezia, right in front of the windows of his ministerial office. Even Altero Matteoli, [National Alliance leader] Fini's political arm in the Berlusconi government had to pay the score of being right-wing in a Europe that was left-wing before 12 June. However, the pre-election controversy, unleashed from abroad by the socialists, ended up in a celebration as the current holder of the Environment Ministry tells *IL GIORNALE* for the first time.

"It was the Belgian colleague, but not the usual Di Rupo, to state his concern over the safeguarding of democracy in a 'Community country' during the meeting in Luxembourg," reminded Matteoli. "When my turn came I answered as I should have answered him. All the more that U.S. President Clinton had just met with leading exponents of National Alliance. The British minister gave me his solidarity immediately. Then we all went to lunch, including the 'contester'..."

Guiglia: How can somebody who is against the Greens be an environment minister?

Matteoli: He can, of course he can. I have nothing against the Greens. Rather, I have good relations with some of them because I have been a parliamentarian for four legislatures and we have often worked shoulder to shoulder. What I do criticize instead is their purely ideological way of facing environmental problems. Some see my ministry as being like a bunker, inside which I must defend myself in order to say no to everything. But how can you do this? The Greens have brought the ecological issue to the attention of everybody. This is an undeniable historical merit. Today they seem to be like the Northern League: They have lost their "propulsive thrust" to change after having given an important pushover to the First Republic.

Guiglia: Which are the environmental emergencies of the Second Republic?

Matteoli: Coastal erosion, the pollution of the sea and rivers. My great bet is making the fish return to the Tiber river. The British succeeded with the Thames, we will succeed as well.

Guiglia: And what about the Right's challenge to the progressive mayor of Italy's capital city?

Matteoli: Let us put it this way, I think that [Rome Mayor] Rutelli himself will willingly accept the challenge. However, you see, in the past I had already attempted to create a parliamentary commission of investigation into the Arno river. There was nothing to be done. Now, however, I will return to the charge. I am strengthening the NOC.

Guiglia: The what?

Matteoli: NOC, the Operational Nucleus of the Military Police. We have about 80 in Rome and seven, I repeat, seven in Milan and Naples. I want to upgrade them. I want to discover who pollutes Italy's small and larger rivers and how, where, and when they do it.

Guiglia: When there was too much smog the mayors stopped the traffic circulating on Sundays. Does the minister agree?

Matteoli: It is a fanciful measure. After having induced the Italians to buy one or two automobiles per person, we are now exhorting them not to use them. The problem lies at the source: We need car parks. At least in part, and together with other measures, they could resolve the matter.

Guiglia: Can nuclear energy return in Italy?

Matteoli: There are contrasting positions in Europe. The United Kingdom wants more nuclear power plants, Spain wants less. We missed the nuclear energy train 15 years ago. Reproposing it today would be useless and outdated, despite the merits. However, Italy would do well to continue studies on the topic. We spent 17 trillion lire for Montaldo di Castro [nuclear power plant].

NETHERLANDS

Netherlands Role in Solar Energy Research

BR2806142194 Rijswijk *POLYTECHNISCH TIJDSCHRIFT ELEKTRONICA/*
ELEKTROTECHNIEK in Dutch May 94 pp 14-15

[Article by Hans Smit: "The Netherlands Knows the Rope With Solar Energy Cells"]

[Text] Photovoltaic solar energy is in, despite the fact that it is still rather expensive. We can easily draw this conclusion after a visit to the photovoltaic solar energy conference recently held in Amsterdam. After decades of laboratory research, the time has now come for test projects, which are cropping up on all sides. At the same

time scientists are diligently searching for yet more efficient and cheaper cells. And the Netherlands is inferior to none in this.

Almost everyone knows the use of solar cells in calculators and wristwatches, but few are aware that they belong to the most important durable energy sources of the future. Until now solar cells have been relatively expensive, and we only find them in places where no electricity networks are available; on light buoys and beacons, on water pumps for cattle in the fields, on ships and in garden houses. But all that is going to change. Whoever looks ahead of trends and developments, such as the ECN [Netherlands Energy Research Center] has done in a number of scenario studies, can see that sooner or later photovoltaic solar energy will approach the price of fossil fuels. Numerous roofs and walls will then be "invested" with solar cells.

The question now is which is the best road to take to that future. Should we aim for cells with a higher performance, or should they simply be cheaper, by using better production methods for instance? This question was of central importance during the 12th European solar energy conference which was held from 11 to 15 April in Amsterdam. The Netherlands is not yet facing this choice. In the national research program into photovoltaic solar energy (NOZ-PV) which is being run by NOVEM [Netherlands Association of Energy and the Environment], it is explicitly stated that both options must be examined equally carefully. The aim is in any case an ambitious one. According to Minister Andriessen, by the year 2010 some 250 MW of solar power must be available in the Netherlands.

Harmonious

In the area of cell research, we can separate different kinds of solar cells which will play a part in the short, medium, and long term. For the short term, there is a major role for cells with thin layers of crystalline silicon. R&S Renewable Energy Systems, a subsidiary of Shell, is cooperating with ECN on this in the Netherlands. If everything goes according to plan, cells will be produced this year which will be able to convert 15 percent of the sunlight into electricity, an achievement of world class. Even more efficient cells are available in Japan (from the Kyocera company) but these are much more expensive. The American company Solarex has cells which are the same price, but which have a lower performance.

In the medium term, the best option is the cheaper thin film cells made of amorphous silicon CIS CdTe [Cadmium Telluride solar cell] and polycrystalline. The University of Utrecht, which has acquired a good reputation here, is cooperating with the French company Naps toward obtaining a stable yield of nine percent under production conditions.

For the long term, that is the period after 2010, a technology is required that can really compete with the prices of conventional energy sources. We are talking about cells with a productivity of more than 30 percent,

for which materials will be used with a varying spectral selectivity that can be combined in such a way that color sensitivity becomes flexible. The reason why these cells will only be available in the long term is because advanced technology is needed to apply the different layers.

Difficult To Compete With Electricity Companies

Although photovoltaics score well in consumer electronics, they are not yet able to compete with the power companies. It is still four or five times too expensive. This has not prevented numerous demonstration projects from being set up. In some countries (France, the United States), the central systems form the principal part, while in other countries the resident areas take precedence. In Japan, for instance, 70,000 dwellings must dispose of photovoltaic roofs by the turn of the century, good for a total capacity of 200 MW. By then the cost of electricity from sunlight will come to about 50 cents per kWh, comparable with the price that Japanese consumers are paying now. In the United States plans are more ambitious: 1,000 MW by the year 2000 and 10 cents per kWh.

In the Netherlands the accent is on decentralized systems connected to the network in resident areas, but the autonomous systems cannot be abandoned either. Yet the aim remains modest. We will be happy with a small 10 MW by the year 2000. Energy companies will participate, such as the Amsterdam energy company which has become involved in the building of a networked 250-kW system on the roofs and walls of 66 homes in Nieuw Sloten. The regional energy company in Utrecht is also doing its best with the installation of a 55-kW system on a baffle board along the A27 near De Bilt. There are further plans for the installation of solar cells on the roofs of 400 new homes in Amersfoort.

Copying From Nature

A completely different type of solar cell which stands an excellent chance in the medium term is the organic solar cell. It works in a similar way to the leaf of a plant or tree. These also change sunlight into energy. The spiritual father of the development of this cell is the Swiss Professor Graetzel, who developed a cell with a yield of 12 percent. The idea has been enthusiastically received in the University of Wageningen and research is being undertaken there into further improvement of the cell.

[Box, p 4]

Sunwater Bicycle Wins Design Competition

A water bicycle running on solar energy has run off with the first prize in a design competition held during the solar energy conference. Most noticeable are the two solar panels mounted at the front and the rear of the five meter long water bicycle. Propulsion is achieved by means of an outboard screw which is driven by muscle power on the one hand and by electricity (via solar cells) on the other.

According to developer Ir. Jan Husslage, member of the Utility Construction Group in the Civil Technology faculty, the boat can also be used as a tent. In wet weather the roof is "up" in a few minutes. Side canvasses can also be zipped on forming an enclosed space. There is enough sleeping room for two people.

[Box, p 15]

Sun Bicycle Primarily Functional

Another prize winner: The solar bicycle cart from Mr. Lentz and Mr. Hermans from Amersfoort. In the cart (with the solar panel on its lid) there is a battery with a regulator and a small electric motor which turns the axle. The speed can be controlled via a small handle on the steering wheel. Extra luggage doesn't therefore mean extra hard peddling.

But there is more. The cyclist has his own electricity station with him. The built-in battery and electronics supply current for lighting, radio, shaving equipment, etc. There are power sockets available, and even a handy cable reel. In particular the integrated battery charger can charge all kinds of battery. Handy for the pocket torch, walkman, camera, or flash unit. Furthermore, two child seats can fit onto the bicycle cart. The lid in this case becomes a roof and the solar panel functions as usual. Once home, to crown it all, you can remove the lid and fix it in the shed. The removable energy module can then supply power, for instance for the garden lighting.

Environmentalists To Attempt To Sink Norwegian Whalers

AU3006092494 Paris AFP in English
0737 GMT 30 Jun 94

[Text] Ijmuiden, The Netherlands, June 30 (AFP)—Twenty ecology activists from around the world are to set sail from here on Friday [1 July] to unleash a mini-submarine designed to sink Norwegian whaling vessels off the Faroe Islands and Iceland.

The 56-meter (180-foot) Whales Forever, skippered by former Greenpeace activist Paul Watson of Canada, will launch the *Mirage*, a submarine eight meters (27 feet) in length equipped with a robot arm.

The arm, according to their plan, will hammer away at the hull of a Norwegian whaler until the vessel sinks.

The *Mirage* was built in Plymouth, England in 1987—ironically, for the Norwegian navy—and operates at a depth of 300 meters, carrying two people, including a pilot who must lie on his stomach.

Watson and his California-based group Sea Shepherd, made up mostly of former Greenpeace activists, has already managed to sink eight whalers since 1977. The names of each of its victims are engraved on the mast of Whales Forever.

Sea Shepherd split from Greenpeace, dismissing the latter as having gone soft and "bureaucratic."

Aboard Whales Forever will be a 27-year-old Norwegian, Bjorn Ursfjord, who deserted the navy to protest Norwegian whale hunting and has sought political asylum in Australia. If the vessel is seized by Norwegian authorities during the operation, according to Watsons, Ursfjord could face a prison sentence.

Watson said the mission is aimed at intimidating whale-hunters, who in the past have shown themselves capable of putting up violent resistance. Whales Forever has been attacked during previous operations, not only by whaling vessels but by the Norwegian maritime police as well.

"We can defend ourself," Watson asserted, pointing to an arsenal of water cannon, barbed wire and stink bombs.

He argued that United Nations resolutions authorize defense of the whales and insisted that his group does not target humans.

Before attacking a whaler, he explained, he and his crew make sure there will be no injuries or loss of life.

Watson accused the Norwegians of violating ecological laws as well as a moratorium on commercial hunting that was approved by the International Whaling Commission in 1986.

During the two-month season that starts next week Norwegian hunters plan to take 300 whales.

SWEDEN

Government To Phase Out Freon Faster Than EU

94P20937A Stockholm DAGENS NYHETER
in Swedish 10 June 94 p 7

[Article by Susanna Baltscheffsky: "Quick Ban on Freon: Sweden Phases Out Before EU"]

[Text] Sweden is defying the European Union [EU] Commission and moving forward more quickly than the EU in phasing out soft freon gases in rigid plastic. But it is still up to the government to decide the rate at which a ban on freon gases used as the cooling agent in refrigerators and freezers will be instituted.

The government decided on Thursday [9 June] that soft freon gases, CFC compounds, cannot be used to manufacture rigid foam plastic after 1 July 1995. Soft freon gases also destroy the ozone layer and must therefore be limited. Imports of goods containing freon blow-molded plastic will also be banned after that date.

When the EU Commission was informed about the new Swedish regulations, it said that Sweden should adapt itself to the rules that the EU countries are now discussing. But there are no decisions yet, and the rules that

are proposed in the EU mean a significantly slower institution of a ban on freon than the Swedish regulations.

Trade Barriers

As DN [DAGENS NYHETER] has previously described, the Commission believed that stricter rules can create trade barriers between Sweden and the EU countries. But now the government has decided that Sweden will go its own way.

With Thursday's decision, a large part of the freon usage in Sweden will be regulated. But there still remains a large area of usage to be dealt with, namely CFC's as cooling agents. When it comes to large refrigerators and freezers and air conditioning units, there are still no regulations for when soft freons will be banned. Just as large an amount of CFC compounds are used in the production of rigid foam plastic as in various types of refrigerators.

The Nature Protection Board suggested in February that the phaseout in these sectors should begin on 1 January 1998 and be concluded by the new year 2002. That is more than a decade ahead of the EU's timetable.

Still Unclear

The EU Commission will also be informed about the future Swedish ban on CFC's as cooling agents. Then the Commission will give its viewpoints. This whole notification process will take at least a half a year.

But the government has not yet given an opinion on this proposal. "The phasing out of soft freon gases as cooling agents is more difficult than regulating their use in manufacturing rigid foam plastic," says Ulrika Hagbardt, the freon expert at the Nature Protection Board. "There are more parties involved, many of whom own refrigerators and service companies. There are also not as many substitutes to use."

Environment Ministry To Examine Oresund Link Impact

PM0306141894 Copenhagen BERLINGSKE TIDENDE in Danish 2 Jun 94 p 9

[Steen Vogt report: "Swedes Put on Their Thinking Caps"]

[Text] Yesterday morning the Swedish Environment Ministry finally received the latest calculations of the blocking effect the Oresund link will have on the water flowing through the Oresund into the Baltic Sea.

And now, according to press secretary Reidar Karlsson, the ministry will spend the "next few days" going through the documents from the Danish Hydraulic Institute (DHI) and the Swedish Meteorological and Hydrological Institute. The calculations show that the blocking effect of the link is between 0.32 and 0.52 percent, with a 0.2 percent margin of error. As a result the desired zero

solution can be achieved through the compensatory dredging of 2.3 million cubic meters from the bottom of the Oresund.

It has not yet been decided whether the ministry will then be able to make any direct recommendations to the Swedish Government in a few days' time or whether it needs to call in one or more experts from outside to evaluate the calculations.

"The ministry's experts will now go through these documents, but it is too early to say whether they have the necessary competence to carry out a final evaluation of them. But this will be decided within the next few days," Reidar Karlsson said.

According to RITZAUS BUREAU, the report from the Denmark's DHI contains mild "criticism" of the Swedish Water Rights Court which last Friday gave the thumbs-down to the calculations produced so far by the Oresund Bridge Consortium.

"Our first report to the Water Rights Court which was based on varying current conditions showed that the bridge did not have a blocking effect of more than 0.5 percent," DHI department chief Jacob Steen Moller said.

According to Steen Moller, it was unnecessary, after the first report, for the Water Rights Court to demand new calculations regarding south-flowing currents in the Baltic Sea.

UNITED KINGDOM

Childhood Leukemia Linked to Power Lines

94WN0332A London THE DAILY TELEGRAPH in English 9 Jun 94 p 6

[Article by Christine McGourty, technology correspondent]

[Text] Britain's radiation watchdog has found there is some evidence of a possible link between electromagnetic radiation—from sources such as power lines and electrical appliances—and childhood leukaemia.

A report published today by the National Radiological Protection Board says no strong biological evidence exists for a link between electromagnetic radiation and cancer.

But it says there is some evidence from Scandinavian studies of a possible link with childhood leukaemia. It says further large studies are urgently needed to examine the issue.

Mr Martyn Day, the solicitor for several families bringing actions against electricity companies, said: "This is helpful. It shows the NRPB is beginning to accept that a link may exist."

Mr Day represents the family of Simon Studholme, 13, who died of leukaemia in 1992. The family, who live near Bury, Greater Manchester, claim his death was linked to the radiation from an electricity meter on the other side of his bedroom wall and is taking legal action against Norweb, the electricity company. A spokesman said the company intended to defend the proceedings.

The NRPB published a report in 1992 saying there was no convincing evidence of a cancer hazard from the normal levels of electromagnetic radiation found near electrical appliances and overhead power lines. For the update, the radiation experts reviewed more recent studies from Finland, Sweden and Denmark. The group was led by Sir Richard Doll, who discovered the link between smoking and cancer.

"The studies do not establish that exposure to electromagnetic fields is a cause of cancer but, taken together, do provide some evidence to suggest that the possibility exists in the case of childhood leukaemia," the report says. "The number of affected children in the studies is, however, very small."

The report says that how radiation might cause cancer remains unknown. The evidence indicated that low frequency electromagnetic radiation could not damage genes directly, it says. And studies of whether the radiation could promote cancer by interfering with communications between individual cells in the body were also "inconclusive." But the group concluded there was "an urgent need" for a large study of the problem.

Mr Day, representing several families considering legal actions against power companies over cases of leukaemia and brain cancer, said: "I accept that the link is not yet proven but the epidemiological evidence is very strong. Scientists do not yet know how smoking causes lung cancer but 99.9 percent of them believe it does."

Five people living near Abergavenny, Gwent, who developed brain cancer, may also become the focus of a court case. Mr Day said their cancers may be linked to overhead power lines.

And a High Court hearing is scheduled for next month over the laying of underground electricity cables in north London. Three children, acting through their parents, have accused Mr Michael Heseltine, the President of the Board of Trade, of failing to regulate the installation of cables needed to reinforce the grid system.

Details of Pact on Pollution Reduction Told

94WN0331A London THE DAILY TELEGRAPH
in English 14 Jun 94 p 4

[Article by Charles Clover, environment editor: "Britain To Cut Acid Rain Levels by 66pc Under New Treaty"]

[Text] Britain will agree to cut acid rain pollution from power stations and industry by more than two-thirds of current levels by 2010 under a treaty to be signed today in Oslo.

The agreement is expected to be supported by the EC and 29 countries, including many in Eastern Europe for the first time. It will greatly reduce the damage caused to historic buildings, rivers and wildlife by sulphur pollution.

Britain has agreed to reduce its sulphur dioxide emissions by 80 per cent, based on 1980 levels, by 2010. This is 10 years later than the date originally sought by the UN Economic Commission for Europe.

The agreement, to be signed by Mr John Gummer, the Environment Secretary, will also commit Britain to interim cuts of 50 per cent by 2000 and 70 per cent by 2005. The treaty is the first to be based on measurements, pioneered by Britain, of what the environment can tolerate.

But the Friends of the Earth said that Britain had agreed to less demanding reductions by 2000 than any country except Poland.

Sulphur from coal-fired power stations is Britain's main problem. It was called "the dirty man of Europe" in the 1980s, when its annual emissions of sulphur dioxide from the stations were 4.9 million tons larger than any other European country except Russia.

Last year Britain emitted around three million tons of sulphur. In order to meet the 979,800 tons of sulphur target by 2010 Britain must cut present sulphur pollution by 68 per cent. Department of the Environment officials said yesterday that the switch from coal to gas-fired power stations, which emit less sulphur, and acid rain "scrubbers" on coal fired stations would help Britain meet the targets.

There has been some controversy over the failure of PowerGen to fit flue-gas desulphurisation equipment to one of its power stations as promised when the industry was privatised. Officials said there was "no reason not to expect that this would not be fitted."

Environmentalists and industry have complained that Britain allowed Germany to monopolise a generation of technology—flue-gas desulphurisation (FGD)—by not agreeing to reduce sulphur emissions earlier. Britain now hopes to cash in on the next generation of coal-fired power stations which should come on stream by 2010.

These will gasify coal, enabling the sulphur to be taken out without the need for thousands of tons of limestone every year which FGD needs to neutralise the acid.

Friends of the Earth said that Britain's record on acid rain had been one of "reneging on promises and back-tracking with its European partners" and that the privatised power industry had not yet fitted the FGD equipment it promised in 1989.

Ms Gwynne Lyons, air pollution campaigner, said: "We spent a long time arguing for the rest of Europe to play by our rules [on critical loads] then even when we have got our own rules adopted, we still put up a lamentable performance."

She said that for Britain to exploit the commercial advantage from the new gasification technology, tougher standards were needed at home to create a climate for development.

"Always in Britain there is this attitude that we will see how long we can make do with the technology we've got. It makes for bad relationships with our European partners."

Britain announced yesterday that it has ratified an air pollution treaty on volatile organic compounds, pollutants which contribute to the creation of ground-level ozone which causes respiratory ailments.

It will reduce levels of VOCs, which are found in emissions from cars, petrol stations and food manufacture, by 30 per cent by 1999.

UNITED KINGDOM

Clean Bill of Health Given Nuclear Industry

94WN0286A London *THE DAILY TELEGRAPH*
in English 9 May 94 p 10

[Text] The number of nuclear plant workers dying prematurely from all illnesses, including cancer, is lower than the national average, according to a report funded by the atomic energy industry which is published today.

The survey includes information on more than 75,000 people employed between 1946 and 1982 by the UK

Atomic Energy Authority, the Atomic Weapons Establishment, and British Nuclear Fuels at Sellafield.

Workers fell into two groups—those likely to be exposed to radiation who were monitored, and those who were not. The second group included office workers and caterers.

Researchers found deaths from all causes in monitored workers were 19 per cent lower than average, while overall deaths from cancer were 18 per cent lower. By 1989 there were 40,761 workers in the monitored group, of whom 1,884 had died of cancer.

Dr Valerie Beral, of the Imperial Cancer Research Fund, said: "The fact that the number of deaths was lower than average was not unexpected. This is common in high-skill industries which tend to employ healthy people."

The cancers most commonly linked with radiation exposure in previous studies were those of the prostate, uterus, lung, and multiple myeloma and leukemia. The new analysis showed that only leukemia was clearly linked with external radiation.

Dr Lucy Carpenter, of Oxford University, said: "The 49 leukemia deaths observed in monitored workers were similar to the number predicted by general rates but the risk of the disease rose with the radiation dose in these workers."

"The dose-related risk was confined to those last employed at Sellafield, where radiation doses were higher."

Deaths from thyroid cancer were also higher than average—for every 100 cases expected, 181 were observed. Dr Beral said: "The increase was found in groups but there was some weak evidence that the increased risk in monitored workers was linked to radiation dose. This is being investigated further."

Canada Grants Assistance To Implement Ecological Program

*AU3006171894 Kiev HOLOS UKRAYINY in Ukrainian
29 Jun 94 p 5*

[Unattributed report: "Canada Implements the Accord"]

[Text] A memorandum was signed in Kiev on terms of providing technological assistance to Ukraine in the form of a grant amounting to 5 million Canadian dollars. From the Canadian side, on the commission of the

president of the International Center for the Development of Studies, the Memorandum was signed by the director of the Bureau for the Assistance to Countries of Central and Eastern Europe, Dan Daniels, and from the Ukrainian side—by Ukrainian Minister of Environmental Protection Yuriy Kostenko. The document has an important practical significance for implementing the Program for Improving the Ecological Situation in the Dnieper Basin. In particular, it envisages assistance in the creation of an information system for monitoring the quality of water. The center will be located at the State Administration for Environmental Protection in Zaporizhzhya Oblast.

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